COTTON

Volume LXXXII
Number Nine
Ten Cents a Copy

JULY, 1917

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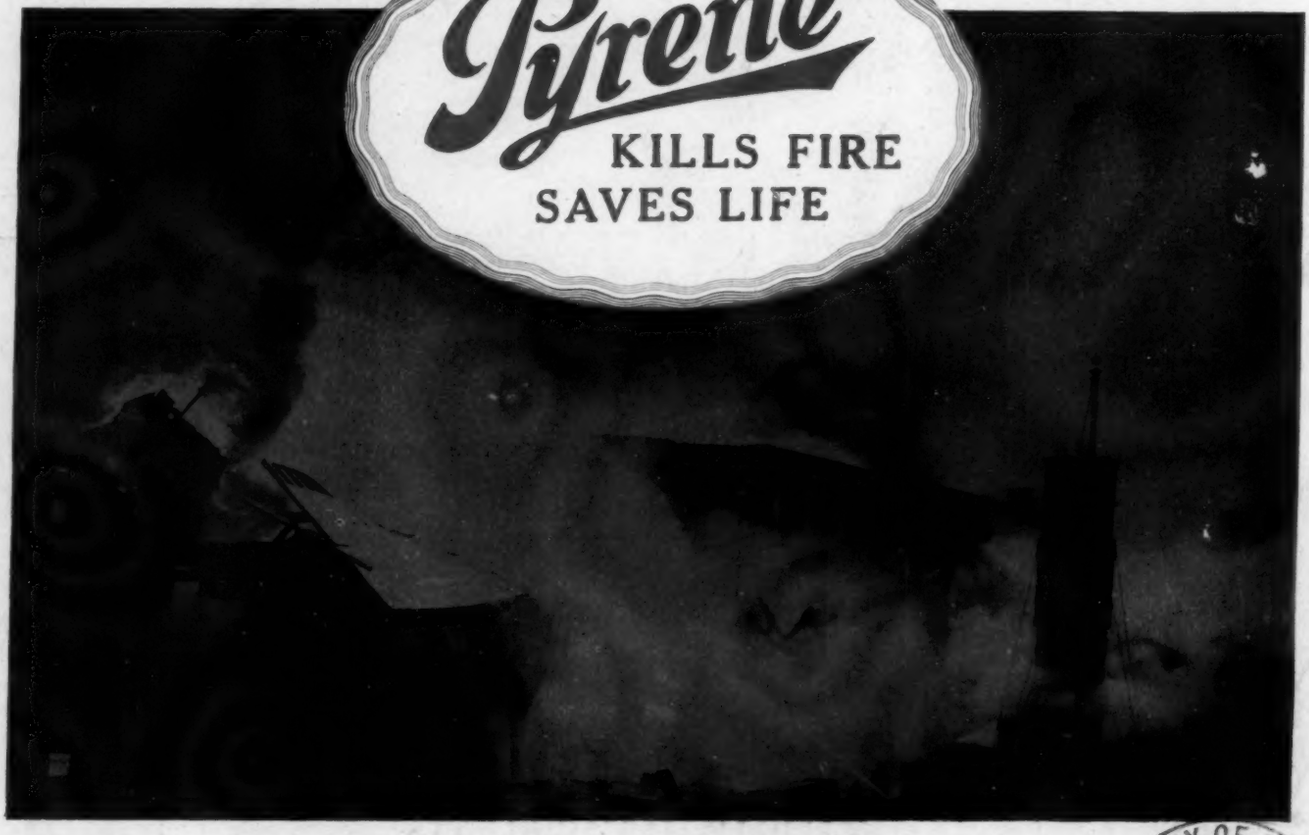
Dalton, and Atlanta, Ga.



A SPARK STARTED THIS!

In a few hours fire wiped out this Cotton warehouse. Thousands upon thousands of dollars worth of cotton were destroyed. Tons of water could not stop the flames.

Yet, if some one with foresight had thought to install Pyrene the calamity never would have happened. One Pyrene in the hands of a single workman could have stopped the fire at the very start.

A cotton fire is a dangerous fire. It spreads like oil on water.

Is Pyrene on guard in your cotton mill, gin or warehouse?

If not, you are inviting calamity.

Pyrene Manufacturing Company
Every Appliance for Fire Protection
52 Vanderbilt Ave. New York City

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COTTON GOODS

That can be woven with one shuttle can and should be woven on

NORTHROP

Trade-Mark Registered

LOOMS

DRAPER CORPORATION

HOPEDALE MASSACHUSETTS

Southern Office
188 South Forsyth Street Atlanta Georgia

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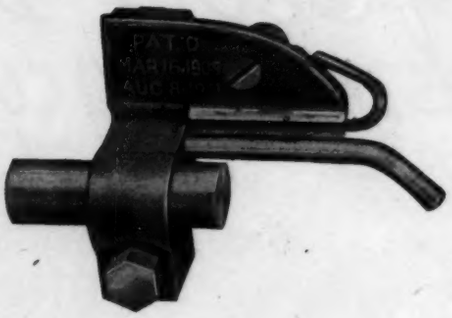

Over 150 000

MacCOLL PATENT SPOOLER GUIDES

In use up to MARCH 1 1917

Adapted to both Cotton and Worsted Yarns

DRAPER CORPORATION

HOPEDALE MASSACHUSETTS

Southern Office
188 South Forsyth Street Atlanta Georgia

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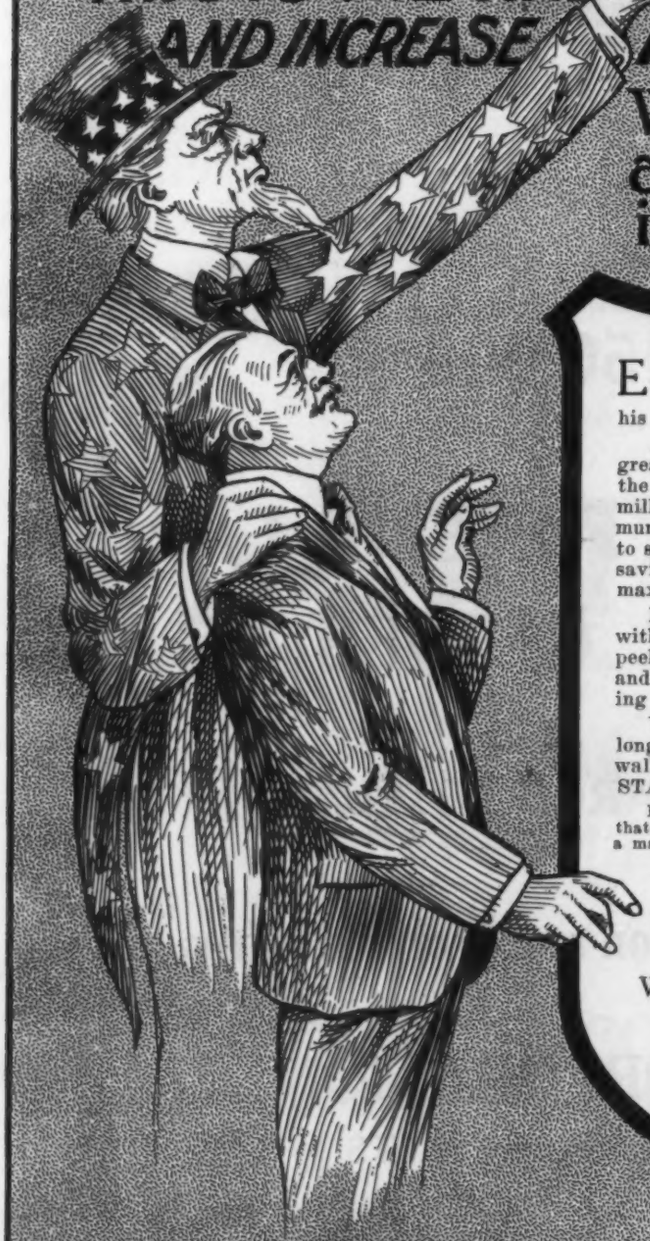
Do Your Bit!

THIS IS THE TIME TO CURTAIL WASTE AND INCREASE MILL EFFICIENCY



White walls that magnify and reflect daylight is one of the best ways

EVERY textile manufacturer is ready to "do his bit," and he can do this in no better way than by making his mill more efficient.

Any efficiency expert will tell you that one of the greatest factors in mill efficiency is LIGHT—daylight is the best of all. By making the walls and ceilings of your mill snowy white you will increase daylight to the maximum, thereby reducing spoilage, enabling your operatives to see better and turn out better work, reducing accidents, saving lighting bills, and in other ways tending to produce maximum efficiency.

But, you don't want to cover your walls and ceilings with any so-called mill white that turns yellow, cracks or peels. You don't want a white paint made of lead, oil and varnish which collects dirt easily and has an annoying tendency to flake off.

You want the best because the best is cheapest in the long run. You want a mill white that will make your walls have a snowy-white, light-reflecting surface that STAYS WHITE with age.

In other words, you want "Dixielite", the superior mill white that is different from the rest, the quality of which is backed by a manufacturer with over 65 years of paint making.

"Dixielite" is a semi-gloss white that is washable and sanitary, but above all it STAYS WHITE. Only one coat is needed over a previously coated white wall.

A sample of "Dixielite" will be sent to any textile manufacturer on request. Demand "Dixielite" from your painting contractor.

Write today for sample panel.

WADSWORTH, HOWLAND & CO., Inc.,

Makers of Bay State Brick and Cement Coatings

139-141 Federal Street, Boston, Mass.

BAY STATE

DIXIELITE

SACO-LOWELL SHOPS

TEXTILE MACHINERY

INCLUDING

ROVING FRAMES
OF
IMPROVED DESIGN
AND
CONSTRUCTION
SLUBBER FRAMES
INTERMEDIATES
FINE FRAMES AND
JACK FRAMES

SHOPS

BIDDEFORD, ME. LOWELL, MASS. NEWTON UPPER FALLS, MASS.

EXECUTIVE OFFICES

BOSTON, MASS.

ROGERS W. DAVIS, Southern Agent, CHARLOTTE, N. C.

"IDEAL"

AUTOMATIC LOOM

Saves 50% to 60% in Weaving Costs

Its breakage and repair expenses are very low due to the fact that every movement is smooth and thoroughly mechanical.

No special supplies, bobbins or shuttles are required enabling you to buy them where you please.

It weaves the highest grade of cloth ever produced upon an automatic loom.

It is the only automatic loom that can use cops or bobbins interchangeably. It is the last word in modern weaving machinery.

Write for our catalog giving detailed mechanical description

"IDEAL"

The Stafford Company

Readville, Mass.

Southern Office: Charlotte, N. C.

"IDEAL"

Cramer System
OF
Air Conditioning

AN EQUIPMENT FOR EVERY REQUIREMENT

Warm Air in Winter — Moist Air When Needed
Cool Air in Summer — Dry Air if Desired

AUTOMATICALLY CONTROLLED ALL THE TIME

Central Station Systems — Spray Humidifiers
Fan Air Conditioners — Ejector Humidifers

Dehumidifying Equipment
Automatic Temperature and Humidity Controllers

Write for Instructive Literature.

Stuart W. Cramer

New York — CHARLOTTE, N. C. — Boston

CROMPTON & KNOWLES LOOM WORKS

LOOMS

WORCESTER, MASS.

PROVIDENCE, R. I. — PHILADELPHIA, PA.

Alexander & Garsed, Charlotte, N. C., Southern Representatives.

Roy Latest Improved Napper Roll Grinder

THIS represents our latest improved grinding machine for grinding two rolls and burnishing four more rolls, all at the same time. The frame is our well-known heavy pattern fitted with two steel shafts for driving the rolls, arranged in such manner that the grinder and both shafts are run by one belt. Attached to the frame is a hardwood tool box. The heads, upon which are the bearings, are adjustable to any width narrower than the full width to the ground, so that different widths of rolls can be ground on the same machine, without buying crosshead extra.

There are two grinding wheels, one for the surface and one for side grinding; the surface grinding wheel is a regular iron self-oiling wheel, covered with emery, and the side grinding wheel is made of 12" emery discs, mounted on a self-oiling hub. The two wheels are interchangeable, one being used at a time to grind two rolls at the same time. While two rolls are being ground in the two upper bearings, four more rolls, which have already been both surface and side ground, are run "back to back," in pairs, in the two lower pairs of bearings, and burnished, making six rolls in operation at the same time.

Owing to the fact that napper rolls, as a rule, require a very long grinder, we do not recommend using a traverse grinder with a smaller shell than 5½" diameter, as a smaller shell usually gets sprung in a very short time. The patent differential motion gives the grinding wheel a steady, positive traverse.

As will be readily seen by the construction of the bearings for holding the rolls they are not only adjustable to the grinder, but they are adjustable for shafts of different diameters, and when the rolls are placed in them it is impossible for the rolls to fly out.

Advise width and make of your napper. We will gladly quote prices.

B. S. Roy & Son Company

Established 1868

Worcester, - Mass.

44 YEARS EXPERIENCE

1873 1917

DIAMOND FINISH

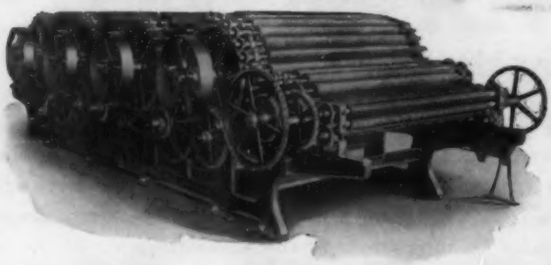
Spinning Rings
Twister Rings
Silk Rings
Traveller Cleaners
Traveller Cups
Guide Wire Sets

WHITINSVILLE SPINNING RING CO
WHITINSVILLE, MASS.

SMITH & FURBUSH MACHINE CO.

PHILADELPHIA, PA.

A Garnett Machine of this size will reduce to fibre hard twisted thread waste without materially shortening the staple.



4 Cylinder 30-inch Garnett Machine.

We also build smaller machines for working softer wastes. Send us a small sample of your stock and ask for Circular S-85.

Why Not Try This Plan In Your Mill

Practical Work in Weaving.

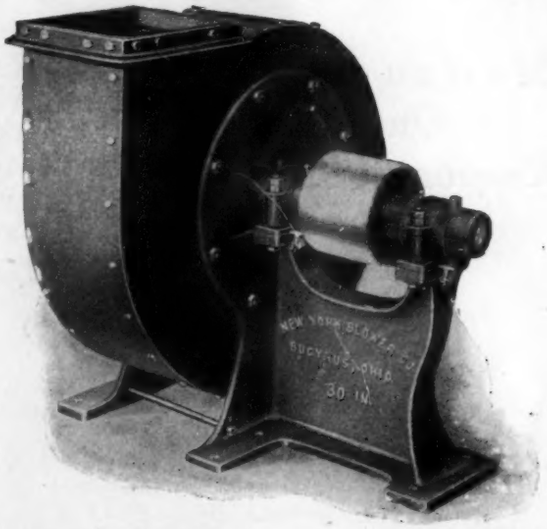
Every Southern textile mill needs young, energetic operatives who have had thorough training—training for leadership in the textile industry.

May we suggest a little plan whereby you can accomplish this? Why not offer a course in Textile Engineering to your young men as a prize for the most efficient work, or the largest volume of work, done in a specified time? The winner sent to the Georgia School of Technology would be thoroughly trained in every process from the raw cotton to the finished fabric, and turned back to you a trained, textile graduate.

The Textile Department of the Georgia School of Technology would be glad to co-operate with all textile manufacturers in working out any plan whereby we can train more of our young Southern men for better work in the textile industry. Two courses are offered: A 4-year course leading to the degree of B. S. in T. E.; and a 2-year course leading to a certificate in T. E.

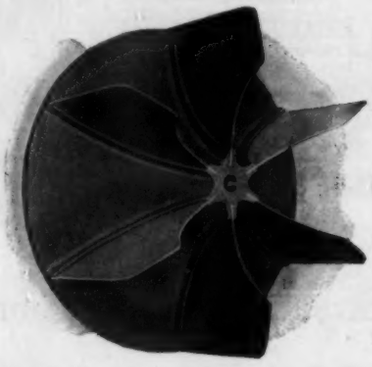
For further information address K. G. Matheson, President, Georgia School of Technology, Atlanta, Ga.

The Fan That Solved The Problem



One of the problems arising around every cotton mill is the suitable handling of the raw material from the opening room to the point where it enters the machinery in the picking department. Many systems have been devised to secure the efficient handling of this material, avoiding at the same time as many of the common difficulties arising with such systems as possible.

The fan that solved the problem is our Reversible Fan. One of the reasons for its success is because of the construction of the fan wheel, which is constructed with a cone-shape back of cast iron, into which the steel blades are cast solidly, thus eliminating all rivets, bolts and screws which are liable to work loose and cause trouble. The wheel is so formed as to offer the least resistance to the material passing through the fan, and on account of this important feature of design proves particularly satisfactory with stringy material such as cotton, shoddy, rags, etc.



Heavy steel plate housings, small details of the fan construction such as high carbon steel shafts and chain oiling bearings—in fact every detail of this reversible fan is fully up to the recognized high standard to be found in all our products. Our catalog R.F. explains fully. Ask for it today.

Our fans and air washers have set a standard for cooling, heating and ventilating. Catalogs Nos. 65 and 67 show the complete line. Write for them today.

BUILT RIGHT RUN RIGHT

The New York Blower Co.,

Main Office: Archer Ave., and Canal Street., CHICAGO, ILL.

Works: BUCYRUS, OHIO

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General Repair of Old Flyers a Specialty.

Flyers of all sizes, as good as new, at attractive prices.

Southern Spindle & Flyer Co., Inc.

CHARLOTTE, N. C.

W. H. MONTY, Pres. & Treas. W. H. HUTCHINS, V. Pres. & Sec'y

Woolen Cards

Waste Cards

Ring Spinning Frames

System: G. Josephy's Erben

Asbestos and Flax Machinery a Specialty

Write for prices and particulars direct to the manufacturers.

Lehnert Textile Machinery Company

53 State Street

BOSTON, MASS.

Measuring Out Responsibility

To be sure, Veeder Counters will show many workers who feel their full responsibility in the present fight for production. Other operators won't appreciate *their* part till it's measured out in YARDS and PICKS.

Veeder Counters will enable you to establish a sort of war-time quota—to fix responsibility in round figures—to give each worker a *definite goal* of efficiency.

Loom Pick Counter

LOOM PICK COUNTER

Designed especially for attachment to looms, and intended to be driven from crank shaft. Furnished to indicate picks in either hundreds or thousands; reads in plain figures. Counter shown registers in thousands of picks up to 100,000,000 picks—and repeats.

Ask for Booklet devoted to counters for thread-winding and textile machinery.

SET BACK LINEAL MEASURING COUNTER

The set-back revolution counter shown below has friction wheel one foot in circumference so that it counts in units of one foot. Shaft carrying friction wheel runs on ball bearings.

Lineal Measuring Counter

Veeder Mfg. Company, 6 Sargeant Street, Hartford, Conn.

Makers of *Cyclometers for Bicycles and motorcycles; Odometers for automobiles or horse-drawn vehicles: tachometers, tachodometers and fine die castings. Counters for practically every purpose*

"A HANDBOOK OF WEAVES"

By G. H. Oelsner, Director of the Weaving School of Werdau.

Translated by Samuel S. Dale, to which the Translator has added a supplement on the Analysis of Weave and Fabric.

This is a valuable work. The author gives a clear explanation of the construction of weaves of all kinds, color effects and mechanical processes, in fact the material represents a dictionary of the technicalities of weaving.

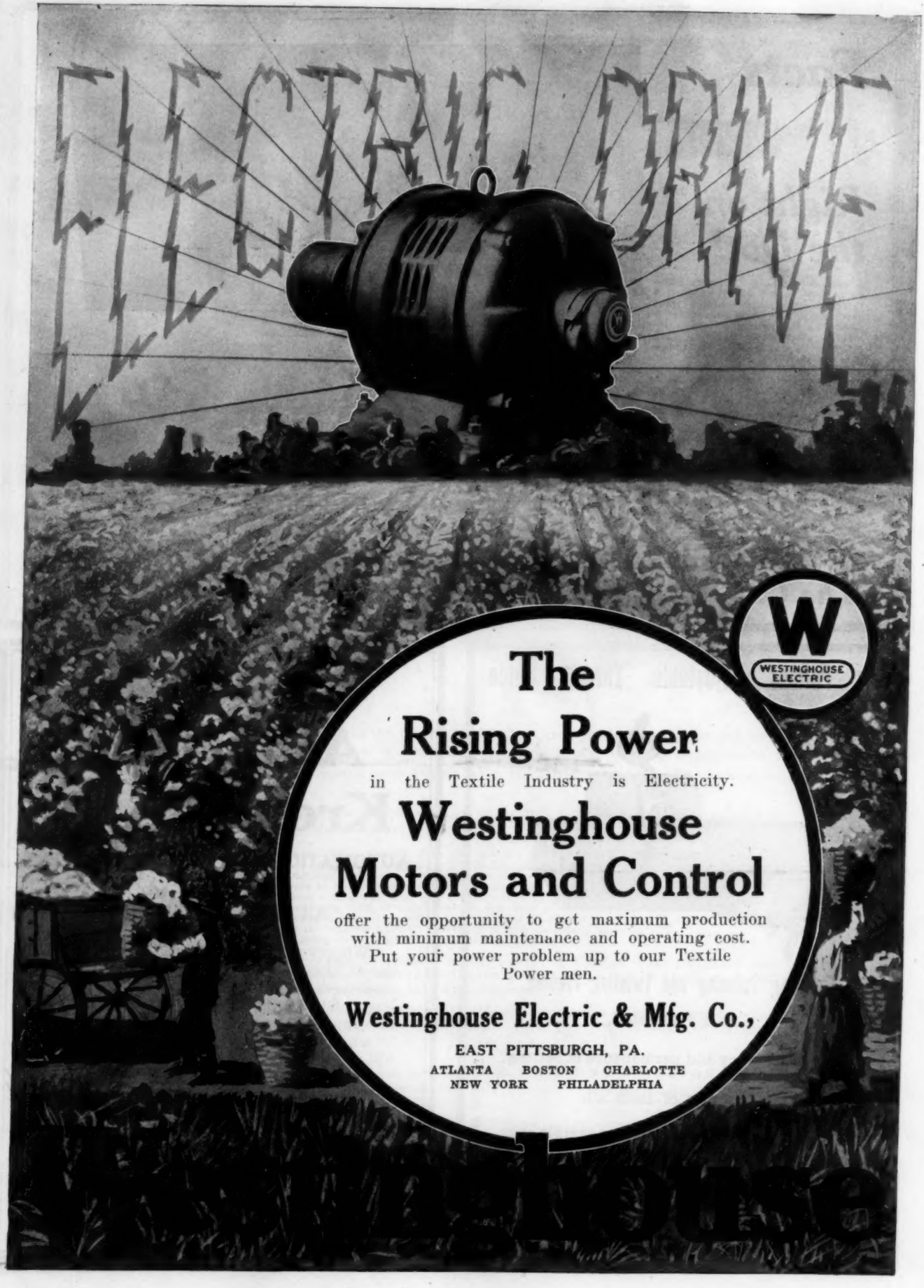
Some of the subjects treated are:

Drawing-in Drafts
Drafting Weaves
The Plain Weave
The Twill Weave
The Satin Weave
Derivative Weaves
Rib Weaves
Steep Twills
Undulating Twills
Broken or Reversed Twills
Offset Twills
Corkscrew Twills
Interlocking Twills
Fancy Twills
Herringbone or Pointed Twills
Diversified Weaves
Honeycomb Weaves
Breaks or Recesses in the Cloth
Lace or Mock Leno Weaves
Weaves that Deflect Certain Threads
Crepe Weaves
Reform Weaves
Back Warp Fabrics
Back Filling Fabrics
Tricot Weaves
Cloths with an Extra Inner Fabric
Double Cloths
Tubular Fabrics
Regulator Double Fabrics
Three or More Ply Cloths
Weaves for Woven Belting
Corded Weaves
Double Weaves Stitched to Form The Patterns (Maltelasse)
Montagnac Weaves
Combination Weaves
Broche Fabrics
Double Transposed Textures
Calculating the Number of Heddles
Influence of the Weave and Color Pattern on the Color Effect.
"Straight-Line" Analysis of Weaves, Patterns and Fabrics.

402 pages, with 1875 illustrations. Price $4.50 and worth every cent of it.

W. R. C. SMITH PUBLISHING CO.

Grant Bldg. Atlanta, Ga.


ELECTRIC DRIVE
W
WESTINGHOUSE ELECTRIC
The
Rising Power
in the Textile Industry is Electricity.
Westinghouse
Motors and Control
offer the opportunity to get maximum production with minimum maintenance and operating cost. Put your power problem up to our Textile Power men.
Westinghouse Electric & Mfg. Co.,
EAST PITTSBURGH, PA.
ATLANTA BOSTON CHARLOTTE
NEW YORK PHILADELPHIA

Facts

Right on the Dot!

Accurate, reliable information—right when you need it—while the work is being done—that's what it means to use Root Counters. A glance at the figures tells you instantly what each machine, each operator is doing—it's not necessary to wait for reports

You owe it to yourself to cut costs and increase efficiency in your plant with

ROOT COUNTERS

Instead of wasting time figuring out the saving, simply send for a trial counter. Put it on a machine, leave it there for 30 days, and let its economy be shown by its **actual use** in **your** plant, under **your** conditions. Let it estimate its **own** value in actdal unmistakable figures. That's the way we have cut out unnecessary trouble for you. We **know** from the experience of others that this counter will save you much thru the elimination of mistakes, overcounts, wasted material and guesswork output. But we want **you** to know this thru the results **you** will get.

Root Counters need no repairs—are not complicated, and have no delicate working parts to get out of order. Once installed, forget them. They work conscientiously—accurately—untiringly.

Ask us to tell you which Root Counter best fulfills your requirements. Remember—you try it for 30 days in actual service without cost or obligation. Send today.

The C. J. Root Company, 70 Johnson St., Bristol, Conn.

The Palmer Adjustable Thread Guide

For Ring Spinning and Twisting Frames

Easily adjusted.

Extreme accuracy and permanence of setting.

Cheapest of them all.

Mail guide-block for free sample.

Patented and manufactured by

THE I. E. PALMER COMPANY

Middletown, - - - Connecticut.

"Load & Look"

American Kron Scales

AUTOMATIC **SPRINGLESS**

Made in U. S. A.

All Metal Construction

Wherever Kron Scales have been introduced, they have increased the speed of the employees, saved time, waste and worry and stopped leaks that would have gone on forever under the old method of weighing.

Why not investigate now and find out what they will do for you in your business?

Made in types to meet all requirements. Any Capacity.

Write for catalog and complete information.

American Kron Scale Co.

422 East 53rd St. New York

Branch Offices: Boston, Providence, Hartford, Philadelphia, Pittsburgh, Baltimore, Chicago, Cleveland, Detroit, Minneapolis, San Francisco, Wilson, N. C.

Southern Office, 405 Urban Bldg., Louisville, Ky.

Cutting the Cost of Cloth Construction

How Mr. H. R. Fitzgerald, Treasurer of the **Riverside and Dan River Cotton Mills, Inc., Danville, Va.,** *one of the largest manufacturers of cotton fabrics in the world, cut his manufacturing costs by putting the heavy figure load of his Billing and Cost Departments on the*

MONROE
Calculating-Adding Machine

Simply a forward turn for Addition and Multiplication; a reverse for Subtraction and Division. No arbitrary rules to confuse or delay.

Portable. Occupies less than a square foot of desk space.

The rapidly expanding business of the Riverside and Dan River Mills meant more and more accounts and an almost endless chain of figure detail for their Billing and Cost Departments.

Mr. Fitzgerald saw that it meant more help or better office equipment to handle the work, so he sent out for relief.

This was the situation when the Monroe was put to the test and how well it met the need is covered in this statement by Mr. Fitzgerald:

> **"We are highly pleased with the Service obtained from the Monroe, as we find it a GREAT TIME SAVER, and accurate in its calculations. And you know we have three of these machines in operation in our Billing and Cost Departments. They were purchased after a thorough trial and comparison with another leading make of machine, both of which were in our office at the same time and subjected to the same test. Your machine has become almost indispensable, and we have no hesitancy in recommending same to anyone looking for an accurate calculating machine."**

The story of Riverside and Dan River may be your story, but whether it is or whether your business is different, Monroe *simplicity* and *ease of operation* will enable you to reach your vital figure facts quickly, accurately and at the minimum expense.

It will pay you to write our Systems Service Department or have a Monroe man call and show you how easily and rapidly the Monroe can figure your Payrolls, Invoices, Statements, Discounts and Interest.

No charge or obligation whatever for a Monroe Demonstration on your own work in your own offices or for information of particular value to you. Simply use the coupon.

Monroe Calculating Machine Co.

General Offices Woolworth Building

New York City

District Office: Healy Bldg., Atlanta, Ga.
J. R. Ramsay, District Sales Mgr.

Offices in Other Principal Cities.

COUPON

Systems Service Department,
Monroe Calculating Machine Co.,
Woolworth Building, New York City.

Without cost or obligation, you may
- ☐ Send "Book of Facts" and "Textile Accounting by Machines."
- ☐ Arrange for Demonstration.
- ☐ Place us on your mailing list to receive information and service of most value to our Accounting Department.

Name of Official _____

Name of Company _____

City and State _____

SONOCO

Spiral Wound Strawboard Tubes

for winding yarn and cloth, are strong, true and clean. They combine convenience in handling with Unqualified Satisfaction and Economy and are used exclusively by many of the greatest mills because—

Every One is Perfect

Our prices are reasonable and our deliveries are prompt. Specify dimensions with your order or send samples. We will fill your requirements to the letter.

Southern Novelty Co., Hartsville, S. C.

Patent Coil Holder

Acme Supplies for the Shipping Room

ACME DOT EMBOSSED STRAPPING
In coils of 300 and 3000 feet.

ACME

ACME GALV. TWISTED WIRE STRAPPING.

MFRS. OF STEEL BOX STRAPPING
LACQ. & GALV. FINISHED BALE TIES
BUCKLES OF VARIOUS DESIGN

WRITE AT ONCE FOR NEW CATALOG.

No. 4 Acme Buckle

Mfd. By
ACME STEEL GOODS CO.
Works: CHICAGO.
Whse. and Offices at 10-14 Tift St., Atlanta, Ga.

ACME BALE TIES, LACQ. and GALV.

"Leatheroid"

Mill Receptacles Give Greatest Service

"Leatheroid" No. 1 Seamless Roving Can.

Steel Clad Truck
None better. All sizes.

Write for Textile Mill Catalog

Sold by any Southern Textile Mill Supply House.

Leatheroid Sales Co.

1024 Filbert Street, Philadelphia, Pa,

Selling Agents for the Leatheroid Co.

"STANDARD"
MILL EQUIPMENT

Superior Products That Last Longer

STANDARD TAPERED FIBRE BASKETS.
"STANDARD" FIBRE CARS.
ROVING CANS—TRUCKS—BARRELS—DOFFING CARS—BASKETS—BOXES—ETC.

Write today for catalog.

STANDARD FIBRE COMPANY

Miller Street, Somerville, Mass.

Necessaries for the Mill and Shipping Department

CARY'S EVERLASTING FLEXIBLE STEEL MAT

Has a Scraping Surface in Every Direction.
Practically Indestructible.

Rust-Proof Reinforced Edges

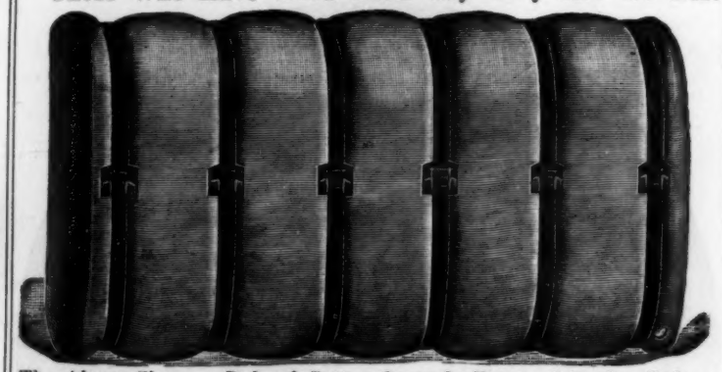
Sanitary Self-Cleaning

The U. S. Government has contracted for this Mat to be used in all its buildngs throughout the U. S.

Twelve Regular Stock Sizes. Special Sizes to Order.

CARY'S BALE BAND AND BUCKLE

Those Who Have Tried Them Say They Are the Best



The Above Shows a Bale of Cotton Securely Fastened by Our Bale Ties and Buckles. Note Its Neat and Compact Appearance.

The Buckle can be applied with the Locking or Hook part next to the Bale, so that there is no possibility of its getting caught in other Bales when piled together.

Also Manufacturers of
Twisted and Flat Wire Box Straps and a Full Line of Shippers' Specialties.

Cary Manufacturing Company, Manhattan Bridge Plaza BROOKLYN, N. Y.

Our new Self-Tightening Twisted Wire Strap.

Nails can be driven anywhere

SPAULDING TRADE Fibre MARK PRODUCTS

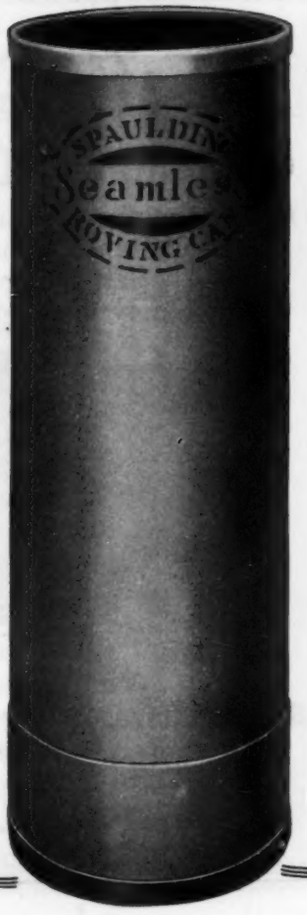
This Trade Mark
Is The Sign of
Superior Quality

and appears on all

SPAULDING FIBRE RECEPTACLES

For Sale by
All Leading
Mill Supply Houses.

Write us for detailed information and catalog.



J. SPAULDING & SONS CO., Rochester New Hampshire

The Switch-Engine Principle

Saves Time and Money on Interior Trucking

A Great waste of time and labor is immediately eliminated in any mill when

NATIONAL ELEVATING ROLLER BEARING CHAPMAN TRUCKS

are installed. This truck is the indoor brother of the freight-yard engine. It carries the load to the machines on a detached platform, sets the platform on the floor convenient to the operator's hands. With a down-push of the handle it picks up a platform loaded with newly finished goods and is immediately **hauling** again. The trucker has little more handling to do than does the engineer in the cab of a freight-yard switch-engine.

Plain platforms or crates and boxes can be used on this truck—any sort of carriers that will serve to prevent wasted motion.

The National-Chapman—the switch-engine truck—not only embodies a vital principle of money saving, interior trucking efficiency, but it also embodies, in itself, principles of mechanical superiority which make it well-nigh imperative—for the manufacturer who desires to get the most out of his trucks—to investigate.

Full particulars regarding National-Chapman Elevating Trucks and our complete Illustrated Catalog C. B. on request.

National Scale Company

3 Bank Street, Chicopee Falls, Mass.

Also Manufacturers of National Counting Machines.

Hyatt Roller Bearings Used Exclusively in All Trucks

Hercules

TRADE-MARK REGISTERED

Combination Doffing Cars

One stationary and one loose fibre box.
Substantial wood platform.
Self-oiling wheels.
Boxes may be steel clad if desired.

Vulcanized Fibre
Roving Cans, Boxes, Trucks, Barrels, Baskets, etc.

Write for Catalog No. 19.

FIBRE SPECIALTY MFG. CO.
Kennett Square, Pa.

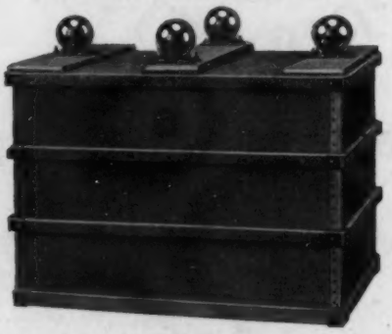
The Buyer Who Knows
Will Always Buy

Keystone Receptacles

Keystone Quality is the Standard
FOR ALL MILL BUYERS

Roving Cans

Steel Clad Cars



Mill Boxes

Doffing Cars

Warehouse Car Showing Bottom Construction.

Noted for their Construction, Quality and Durability.

The superiority of **KEYSTONE Products** is the result of our years of experience in the manufacture of fibre products.

Make no purchases of mill receptacles until you have informed yourself on the quality and prices of **KEYSTONE Products**.

Send your address on a postcard, *now*, and we will forward Catalogue "D."

KEYSTONE FIBRE COMPANY, Yorklyn, Del.

Southern Agent, H. C. Smith, Greenville, S. C.

FIG.20.

The heavy, strong duck used in all Lane Baskets contains only long-staple cotton, and is woven on our own looms.

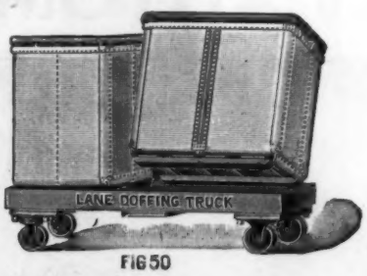


FIG 50

Lane Baskets are perfectly smooth inside and outside.

STANDARDIZE

With

Lane

Canvas Baskets

FIG.27

Lane Trucks are long-lived, light weight and easy running.

Write for Catalog No. 60

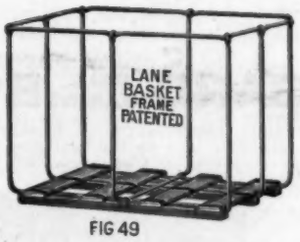


FIG 49

All Lane Baskets are built on this patented *flexible* frame, which **yields** rather than breaks or bends under strain.

W. T. Lane & Bro., Mfrs., Poughkeepsie, N. Y.

Meet The Pressing Demands For Extra Workers By AUTOMATIC TRUCKS

ONE man and an Automatic Electric Storage Battery Truck does the work of six to eight men with hand trucks. A practical way to solve the shortage of labor. Let us send you detailed information as to the savings accomplished in textile mills.

The Automatic Transportation Co., 2933 Main Street, Buffalo, N. Y.

The only truck manufacturers to receive gold medal and highest award at the San Francisco Exposition. Pioneer manufacturers of industrial trucks.

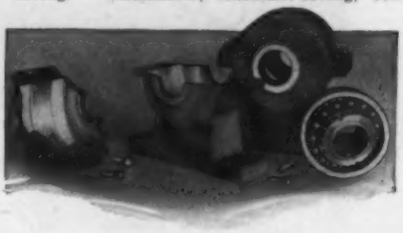
Keep Your Machines Going

Fan Shaft Box, Showing Split Housing

Now, more than ever before, should you insure your machines against shutdowns. Friction is one of the biggest causes for shutdowns, and you should make every machine in your mill as near frictionless and efficient as possible. You can do this—you can save power, save lubricant, save belts, and make your machines cleaner by the use of

HUBBARD BALL BEARING BOXES

Their advantages have been proven in many mills, and the item of cost in changing over to Hubbard Boxes is readily overcome by the power saving. Cleanliness, lubricant-saving, constancy of speed and freedom from hot boxes will also be gained.



Hubbard Boxes are made to replace old plain type journals without machine work in the mill.

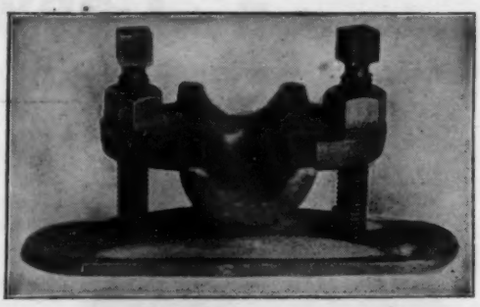
Write today for interesting bulletin.

Hubbard Main Cylinder Card Box Disassembled Showing the S K F Ball Bearing.

Hubbard Machine Co., *Worcester, Mass.*

L. L. Nakashian, Greensboro, N. C.
Mr. Sidney H. Scott, Greenville, S. C.

DAY Adjustable Rocker Shaft Bearings



No. 1 A. Patented Oct. 26, 1915.

THIS is just a common sense attachment that has not failed to satisfy a single mill.

Your rocker-shaft troubles will be over when you equip your looms with Day Adjustable Bearings. They will save you the cost of a new rocker shaft for all time, reduce seconds and thin places, save in supplies, break-outs, and in many other ways.

As one Georgia mill superintendent wrote us,

"Any practical mill man who will test these bearings, will find at least twenty different ways in which they will keep the loom in better shape and increase production. I would advise any mill man to try these bearings and be convinced of the merit of it, like I have been."

This man equipped his 1820 looms with Day Adjustable Bearings.

Any of the many mills using them will tell you about their many advantages.

Let us send you a pair for trial. State kind of loom. Write today.

Textile Specialty Company

(Formerly Day Adjustable Bearing Company)

GREENWOOD, S. C.

A TRUCKMAN HAS 8 HANDS!

WITH

COWAN

TRANSVEYORS

IN these days of labor scarcity we can't afford to scatter men over the mill doing unnecessary work. Every misspent motion must be made use of. Every ounce of energy of every man must be made productive.

Consider your trucking item. Right here is where you can save a number of men, and put those extra truckers on more productive work.

Suppose you could get one man with one truck to do the same work in less time than four of your present truckers do it. Would you consider it? Of course you would, and that's why you need Cowan Transveyors. They save rehandling of goods, eliminate the useless loading and unloading of trucks, stop piling and repiling of goods before and after trucking.

One man with a Cowan can do the work of four men with old style trucks—because all he does is trucking—no loading and unloading. It enables you to substitute cheap wooden platforms for expensive platform trucks.

The effects of installing the Cowan System is felt throughout the whole mill. Aisles are clean, confusion and delay is eliminated, time is saved, no energy is wasted, business is speeded up, and many dollars are clipped from overhead expenses.

The Cowan Transveyor is the pioneer elevating truck, and therefore meets your requirements more satisfactorily. Some of the largest textile plants in the country, the U. S. Government, and hundreds of the biggest concerns in the country have adopted the Cowan System.

Made in any size for any requirement. Write for catalog today.

THE COWAN TRUCK CO., - Holyoke, Mass.

Makers of Cowan Transveyors.

The Brains of The Nation

The Literary Digest is a weekly record of what the brains of a nation —the brains of the whole world—are doing.

The Digest presents the facts as they are without bias.

This is what the intelligent, far-sighted business man wants, the exact facts, so that he can wisely plan for the future.

Never in the history of the nation has the business man been so dependent upon knowing what the people of the whole country—and other countries as well—are doing and thinking.

This need emphasizes how necessary is The Digest.

The editorial content of a magazine determines its value as an advertising medium because this content determines the kind of people and the number of people who will see the advertisements.

Moreover it determines the spirit in which they will read the advertisements.

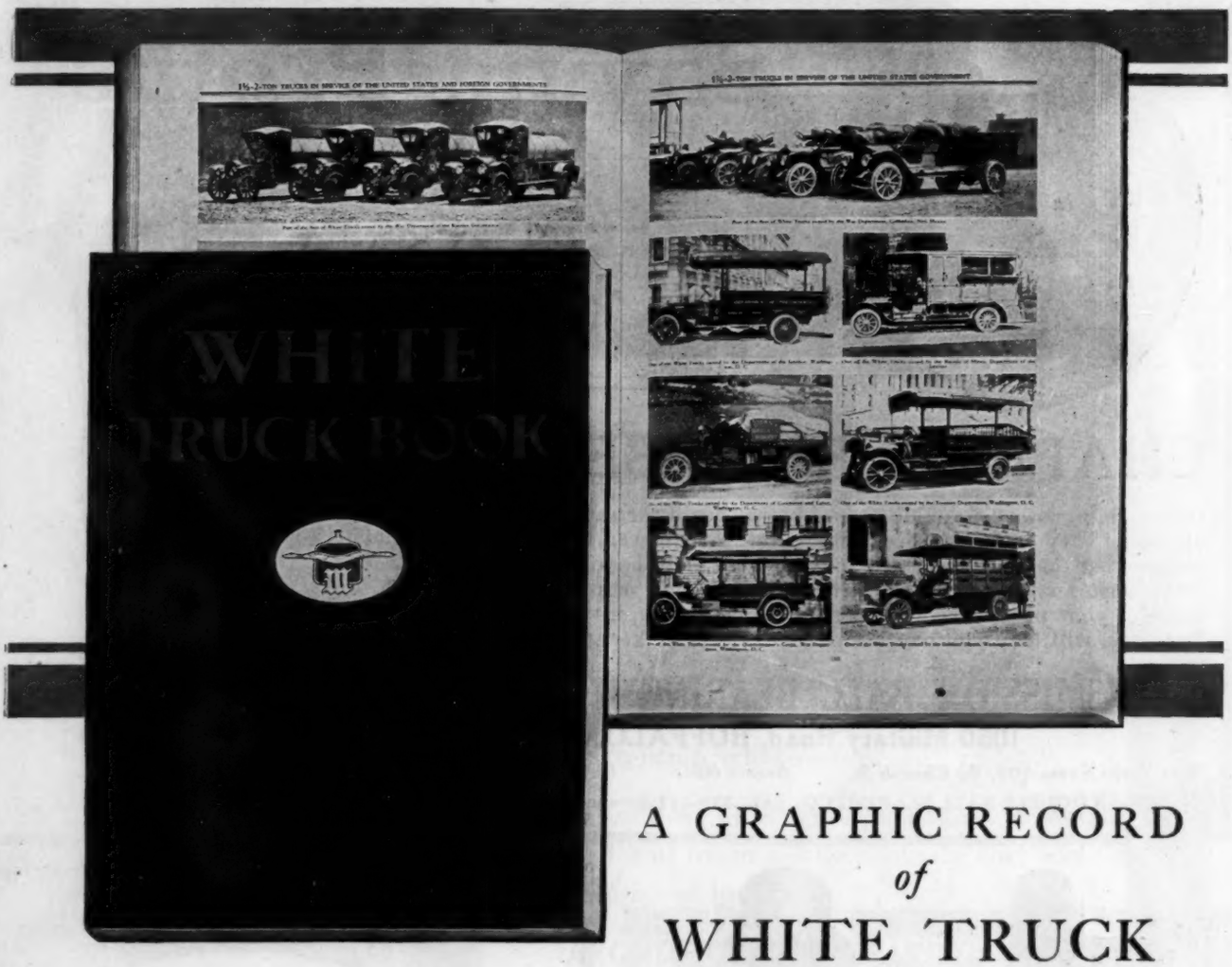
The Digest's circulation of more than 650,000 represents the most intelligent, the most prosperous public in America—the brains of the nation.

There is no limit to the buying power of this public.

IMMEDIATE National Publicity

The Literary Digest

New York



225 Pages—1400 Illustrations

THIS book will be sent gratis to any truck user if the request is made on his business letter head and signed by a responsible official.

White Trucks predominate in this country in total number of trucks in actual service—regardless of price.

A GRAPHIC RECORD *of* WHITE TRUCK PREDOMINANCE

THIS new White Truck Book is the largest and most comprehensive catalogue of truck installations in this country—virtually an official Handbook or Directory of truck uses in all lines of industry and commerce.

It illustrates over fourteen hundred separate truck units, with a wide variety of bodies classified and grouped for each line of business represented.

Body designs and equipment are shown for both standard and special uses, embracing the entire field of truck operation, from the massive dump body to the finest delivery vehicle.

THE WHITE COMPANY

834 EAST 79th STREET CLEVELAND, OHIO

CHAPMAN BALL BEARINGS

Saving Profits

"During the next ten years some of the largest profits in American Industry will be saved out of operation. Heretofore profits have been made, but saving a profit is altogether different."

CHAPMAN BALL BEARINGS

the bearings with the double row of balls—begin the saving at the very source of loss. They can save every ounce of that power that is wasted now in overcoming the frictional resistance of those plain bearings on your lineshafts. That waste, eating into your profits, amounts to more than you may think. Some of your profits from these days of prosperity, invested in Chapman Ball Bearings, will help you pay dividends in days of keener competition.

Investigate—Send for our book on Bearings.

TRANSMISSION BALL BEARING COMPANY, Inc.

1050 Military Road, BUFFALO, N. Y.

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CHAPMAN DOUBLE BALL BEARING CO., Ltd., 339-351 Sorauren Ave., TORONTO, ONT.

Long Life Bushings in Spite of Neglect.

For Efficiency and Economy

Oil-less

"NIG RUM" "BOUND BROOK"

(Impregnated Wood) (Graphite-and-Bronze)

Bearings

Trade Mark Reg. U. S. Pat. Off.

You'll never have to stop your machine, due to the neglect of someone to properly oil it, providing you use NIGRUM or BOUND BROOK Oilless Bearings.

They run smoothly and evenly without oil, grease or attention. They will save you money by saving you oil, and eliminate much of the wear and tear upon the working parts of the machine.

Write for Interesting Booklet, "Oil-less Bearings."

BOUND BROOK OIL-LESS BEARING CO.

10 Church St., BOUND BROOK, N. J.

All Genuine Graphited "Oil-less Bearings" have always been made at Bound Brook, N. J., in the United States of America.

USE THE COUPLING

SYSTEM OF ROPE DRIVING

This coupling is for use on the English system rope drive and controls all stretch of the individual ropes in this system.

Hunt Coupling ready for use.

You can shorten the ropes at any time by simply twisting the coupling, which twists up the strands of the rope and maintains the original rope diameter.

The shortening is done with the rope in position on the pulleys and all splicing costs and delays are avoided.

Ask for catalog W-15-1 giving full information.

C. W. HUNT CO., Inc.,

WEST NEW BRIGHTON, N. Y., U. S. A.

45 Broadway, N. Y. City. Fisher Bldg., Chicago.

Munsey Bldg., Washington.

How many bearings in your factory?
Arguto
NON—METALLIC
Outwears The Best Bronze Metal
Smoother than Grease
One firm discovered that the substitution of Arguto Oilless Bearings for the bronze ones previously used, resulted in a
direct saving of $131.35 per bearing
in the 4½ years that their first Arguto ran continuously without lubrication or *any* attention whatsoever.
The *first* cost of Arguto Bearings is less than 1-3 of bronze—the ultimate cost less than 1-50 of bronze.
ARGUTO OILLESS BEARING CO.
148 Berkley St., Wayne Junction
Philadelphia
ARGUTO Oilless Bearings

Flexible as a Belt

Positive as a Gear

More Efficient Than Either

Why?—Because

1. LINK-BELT SILENT CHAIN can wrap around a wheel as easily as a belt; around a small wheel, *more easily*. (Write for Data Book No. 125)

2. LINK-BELT SILENT CHAIN maintains a positive contact with the wheel; the linear velocity of the chain is the exact pitch line velocity of the wheel. There is no rolling contact, as with gears. (Write for Data Book No. 125)

3. LINK-BELT SILENT CHAIN transmits its pull evenly to every tooth in contact with it. There is no one-tooth action as in gears, and no losses due to rolling friction and to the shock of transferring the load from tooth to tooth. (Write for Data Book No. 125)

4. LINK-BELT SILENT CHAIN can be, and should be, run slack. Belts require a tension in excess of the effective working pull, and to that extent there is a loss of power in journal friction. Belts creep and slip and lose power in that way. *Link-Belt Silent Chain* never slips, and will regularly show 98% efficiency. (Write for Data Book No. 125)

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Boston - - - 49 Federal St.
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Cleveland Rockefeller Bldg.
Detroit - 122 Dime Bank Bldg.
Minneapolis - 418 S. Third St.
Kansas City, Mo. 407 Finance Bldg.
Toronto, Can. - -
Knoxville, Tenn. 576 Empire Bldg.
Seattle - - - First Ave., S.
Portland, Ore. 14th and Lovejoy
San Francisco - 461 Market St.
Los Angeles, 161 N. Los Angeles St.
Canadian Link-Belt Co., Ltd.
Denver - - Lindroth, Shubart & Co.
Louisville, Ky. - - P. Wehle, Starks Bldg
Birmingham D. T. Blakey, Am. Trust Bldg.
New Orleans - C. O. Hinz, Hibernia Bank Bldg
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LINK-BELT SILENT CHAIN

37

GRATON & KNIGHT

Standardized Series LEATHER BELTING

Tanned by us for belting use

GRATON AND KNIGHT

Are You Trying to Drive Pulleys With A Belting Specification?

How often does a belting specification get you the kind of belts you really should have? Do the belts you get agree with the specification? How many men in your mill could tell? Could *you?*

The only specification the belt buyer should attempt to make is a specification of the work to be done. Because to get the work done most efficiently and economically is the only possible reason for any kind of a specification about anything.

Graton & Knight offer you this practical specification—the work to be done. To do the work properly in every case is the basic idea underlying the Graton & Knight Standardized Series Leather Belts.

This Series was evolved to fit the working needs of actual conditions, *not* to meet theoretical conditions as described on paper. Every belt in this Series—and there is one for every textile mill drive—has been standardized only after it has been *proved* right.

Face these facts squarely—then consider the safety, ease and economy of buying Graton & Knight Standardized Belts. Not by guesswork, nor on discount—but on *Standardized performance*

Write for a description of Graton & Knight Belting Standards and a copy of their Book on Belting.

The Graton & Knight Mfg. Co

Oak Leather Tanners, Makers of Belting, Lace Leather, Packings and Sundries.

Worcester, Mass., U. S. A.

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Atlanta	Detroit	New Orleans	Portland, Ore.
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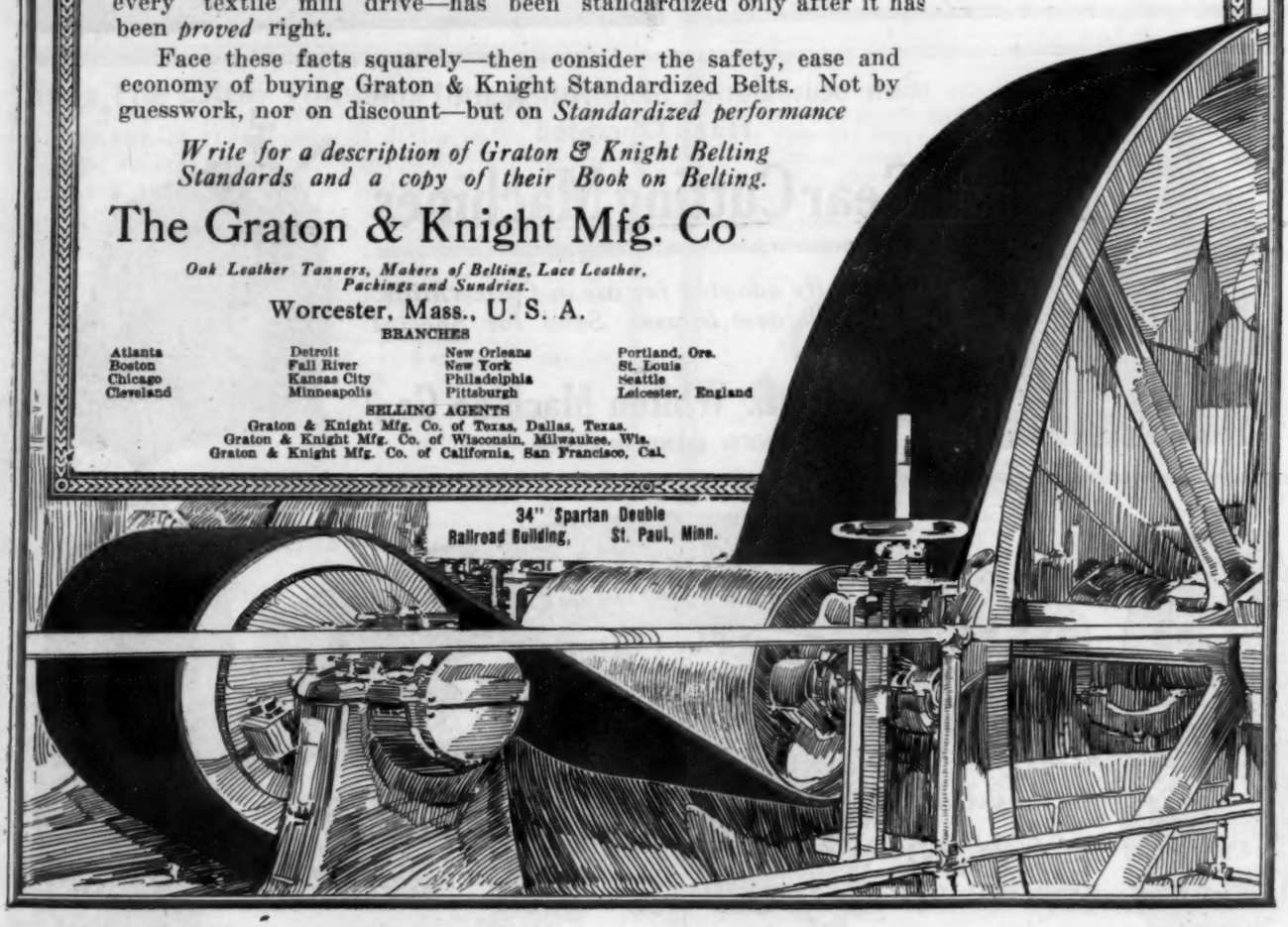
Graton & Knight Mfg. Co. of Texas, Dallas, Texas.
Graton & Knight Mfg. Co. of Wisconsin, Milwaukee, Wis.
Graton & Knight Mfg. Co. of California, San Francisco, Cal.



34" Spartan Double Railroad Building, St. Paul, Minn.

CRESSON-MORRIS CO.

POWER TRANSMITTING MACHINERY

PRICE

ALL things must bear a price in proportion to the time, skill and creative thought attendant upon their manufacture.

Thus it often happens that the things we call "dear" when justly considered in the light of their true inherent qualities are in reality economical.

That is invariably true of the complete line of Power Transmitting Machinery manufactured by the Cresson-Morris Company for the past half century and over.

All our best efforts through these many years have been concentrated on the one ideal of making machinery that will deliver utmost power for you rather than utmost profit to us.

How well we have succeeded is evidenced by the multiplicity and size of Cresson-Morris installations in practically every line of business in which power is transmitted.

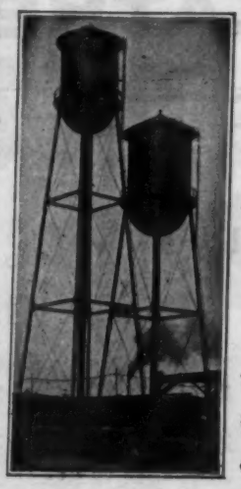
CRESSON-MORRIS COMPANY

ENGINEERS—FOUNDERS—MACHINISTS

PHILADELPHIA, PENNA.

TOWERS and TANKS

That are Built Right



Boilers;

Structural Steel Work

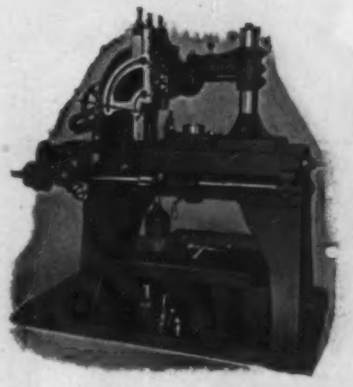
Sheet Steel and Plate Work

Boiler Tubes, Castings, Etc.

Tell us what you want and let us quote prices.

The Walsh & Weidner Boiler Co.

Chattanooga, Tenn.



Full Automatic, Semi-Automatic and Hand Operated

Gear Cutting Machines

Especially adapted for use in Cotton Mills. Hundreds now in use. Send for Special Circulars.

The D. E. Whiton Machine Co.,

NEW LONDON, CONN.

FREADRICH BELTING CO.

MANUFACTURERS OF

Oak Tanned LEATHER BELTING Surface Tanned and Waterproof

LACINGS CEMENTS DRESSINGS

SLABS STRAPS

SOUTHERN REPRESENTATIVE M.E.STEVENS 316 PEACHTREE ST., ATLANTA, GA.

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EXPORT DEPARTMENT NEW YORK, U.S.A.

99 50/100% PURE

The Purer the Gas You Use
The Lower Your Welding Costs

When you use BURDETT OXYGEN you are reducing your welding costs to a minimum, for BURDETT OXYGEN is 99 50/100% PURE—the best that can be bought.

There is a Burdett Plant near you.

Save delay by ordering from the nearest Burdett Plant.

Chicago, Ill.

Chattanooga, Tenn.	Oklahoma City, Okla.
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Detroit, Mich.	Pittsburgh, Pa.
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Norristown, Pa.	Los Angeles, Cal.

Burdett Oxygen Co. and Associated Companies

Chicago
St. Johns Court

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Gas and Electric Building

BURDETT OXYGEN

"The Best by Test"

It Is The Little Things That Count.

In one of the prominent cotton mills of the South, the savings effected by B-W Welding Apparatus as shown by the cost sheet covering a period of one year were as follows:

Department	Value of Welded Parts if Purchased New.	Ttotal Cost of Welding, including Oxygen, Acetylene Supplies, Labor, etc.	Actual Saving Over New Parts
Weaving Room	$1,835.43	$864.33	$971.10
Card and Waste Room	305.35		
Spinning and Spooling Room	99.80		
Slashing Dept.	53.75	576.22	495.58
Cloth Room	45.15		
Machine Shop	502.50		
Miscellaneous	62.25		
TOTALS	$2,907.23	$1,440.55	$1,466.68

From this total saving must be deducted the junk value of the parts welded, but this is offset many times by the saving in time and the convenience of making repairs on the spot without any delay.

It would be still more convincing if we were to make an actual demonstration in your mill. Write us today and we will explain our proposition.

BIRD-WILCOX CO., Inc.

Chattanooga Atlanta Charlotte Savannah

Oxy-Acetylene Welding and Cutting

By oxy-acetylene welding this shuttle box was made good and strong as new at a cost of 50c.

Save Time and Money by Welding Broken Parts

In making this repair right in its own shop, a large textile mill saved not only the cost of a new shuttle box, but also the valuable time it would have taken to secure a new part.

In *your* plant oxy-acetylene welding will be found highly profitable for repairing broken or worn machinery or tools, and for reclaiming and keeping in service much valuable material that would otherwise be "junked."

In busy textile mills time is a vital factor. With the Prest-O-Lite Process a few minutes' welding work will many times avoid several hours, or even days, loss in production from broken machinery.

This process has great possibilities for decided savings in every textile mill. It makes possible quicker, better repairs at much less cost.

Prest-O-Lite PROCESS

Employs both gases (acetylene and oxygen) in portable cylinders. Prest-O-Lite Dissolved Acetylene (ready-made carbide gas), is backed by Prest-O-Lite Service which insures prompt exchange of full cylinders for empty ones. Provdes dry, purified gas, insuring better welds, quicker work and lower cost, and also avoids the large initial outlay and heavy depreciation insurred in making crude acetylene in a carbide generator.

Necessary equipment is not expensive. We furnish high-grade welding apparatus for $75 (Canada $100); acetylene service at additional cost. Adaptable for oxy-acetylene cutting by the addition of special cutting blowpipe. Thorough instructions are furnished free to every user of Prest-O-Lite Dissolved Acetylene—any average workman who understands metals can learn the process quickly and easily.

Write for valuable illustrated literature and data on work others are doing by oxy-acetylene welding. It may point out ways to solve YOUR problems.

The Prest-O-Lite Company, Inc.

U. S. Main Office and Factory:
836 Speedway, Indianapolis, Ind.
Canadian General Office, Dept A 5 Toronto, Ont.

59 Branches and Charging Plants.

World's Largest Makers of Dissolved Acetylene

QUALITY FIRST

Should be the determining factor when buying Machine Tools and Mill Supplies. The companies we represent are the manufacturers of the best in their line—assuring best quality—backed by our personal guarantee, "Satisfaction in every transaction."

Selling Representatives:

Lodge & Shipley Lathes
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Acme Turret Lathes
The Skinner Chuck Co.
Weaver Garage Equipment

Cincinnati Millers and Grinders
Cincinnati Planers and Boring Mills
Cleveland Open Side Planers
Landis Bolt Cutters
Landis Grinders

Gould & Eberhardt Shapers and Gear Cutters
Cincinnati Bickford Upright and Radial Drills

E. O. Partridge Emery Grinders
Armstrong-Blum (Marvel Power Hack Saws)
Greenerd Arbor Presses

Bullard Boring Mills and Vertical Turret Lathes
Williams-White Punches and Shears
Stoever Pipe Cutting Machines
Baker Bros. Drills and Key-seaters

WHITING FOUNDRY EQUIPMENT COMPANY

Mechanical Rubber Co.
McCaffrey File Co.
Imperial Brass Mfg. Co. (Welding Outfits)
National Steam Pump Co.
Bailey-Burruss Mfg. Co.
Stover Mfg. & Engine Co. (Gas Engines)
Homestead Valve Mfg. Company

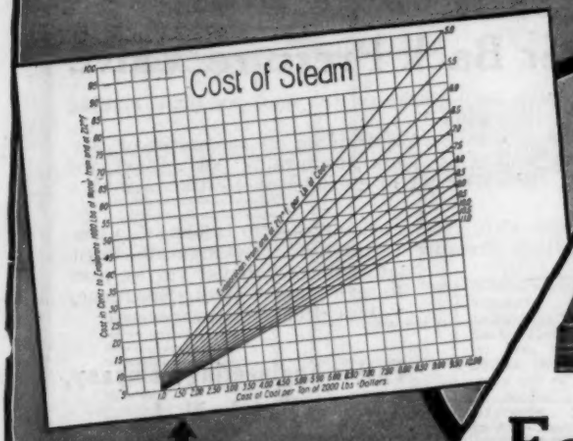
SEEGER-WALRAVEN COMPANY

Machine Tools---Mill Supplies---Foundry Equipment

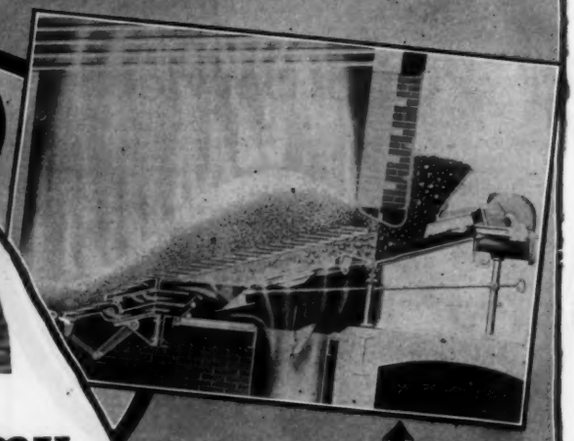
38 West Alabama Street Atlanta, Georgia

"Quality is Economy"

Westinghouse
Underfeed Stokers



Knowing the price and the amount of coal burned, and the quantity of water evaporated, the above table will tell you what it should cost you in cents per lb., to generate steam. This is a very useful table. We will gladly mail you a copy upon receipt of your name and business address.



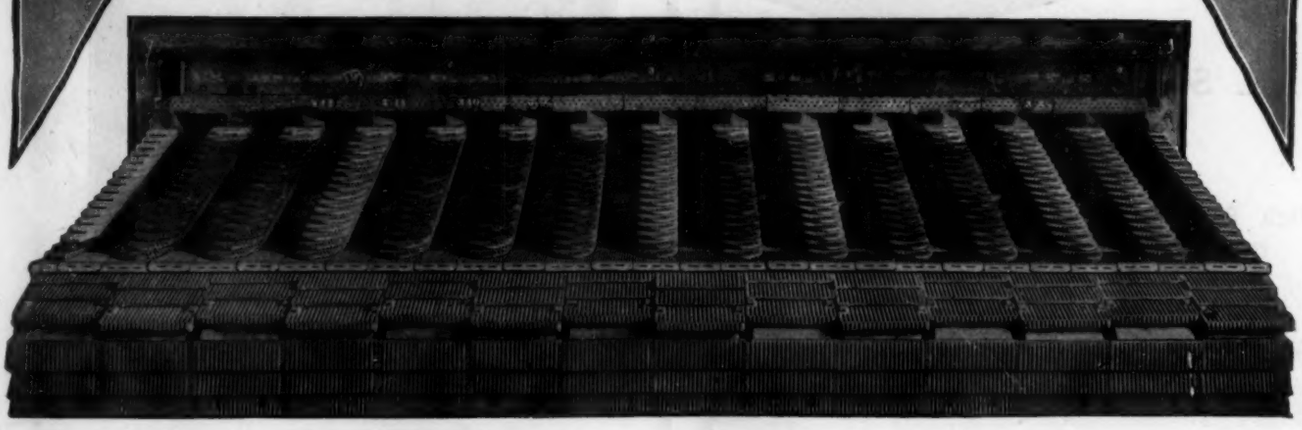
No waste—No idle equipment—No Banked Fires— No Boilers to be held in readiness for the daily peaks. FOR, the Westinghouse Underfeed Stoker embodies in its design a wonderful flexibility— a tremendous overload capacity

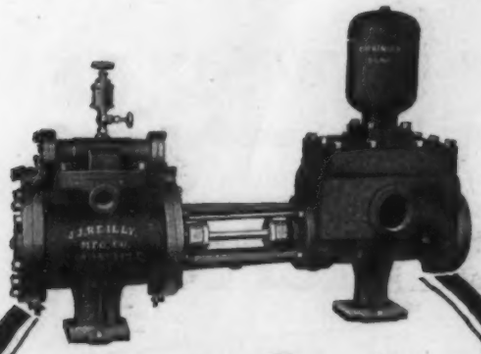
Economy
and
Reserve Capacity
For All

Even if you have but one or two small boilers, there is no reason why your economies and your reserve capacity should not be relatively equal to those of the big central station.

Westinghouse Underfeed Stokers are built in many sizes and for all steaming requirements.

Westinghouse Electric & Manufacturing Company,
East Pittsburgh, Pa.





Pump Service

That's what you get when you install a Grainger Pump. Every Grainger is carefully tested to its full rated capacity, packed and shipped **ready for use.** Service first to last—our motto.

Boiler Feed Pumps, General Service Pumps, Tank Pumps, Light Service Pumps, Vacuum Pumps.

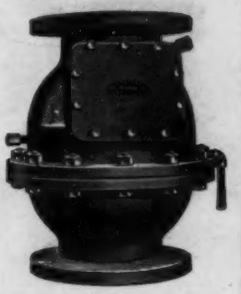
Tell Us Your Requirements

J. J. REILLY MFG. COMPANY,
Incorporated
121 North 10th St., Louisville, Ky.

Grainger Pumps

A SPRING

acting through simple compensating levers, is the controlling principle of



Foster Back Pressure Valve

The valve stem works on the dash-pot plan, making clattering impossible.

Provision is made for draining off the water of condensation, and when back pressure is not needed, for throwing the valve out of commission by the turn of a screw.

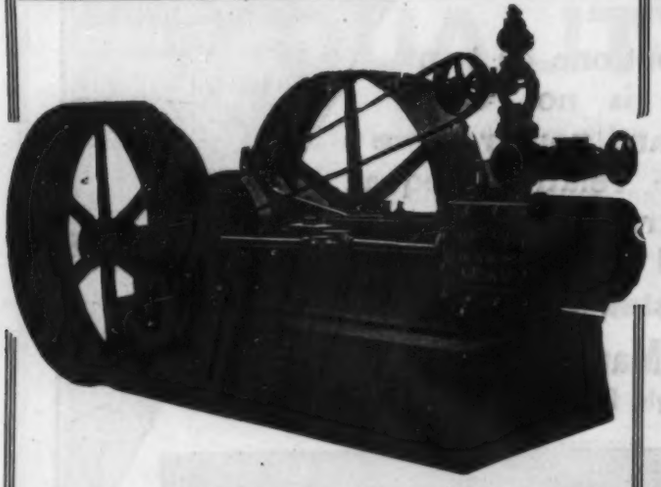
A Foster Catalog gives details,—also information concerning High Pressure Regulators, Low Pressure Regulators, Free Exhaust Valves, Non-Return Stop Valves, Emergency Valves, Pump Governors, etc.

"Back pressure valves, controlled by direct-acting springs, are irregular in action owing to the cumulative effect of spring pressure. If direct-acting levers and weights are used, they are likely to clatter and pound themselves loose."

Foster Engineering Company,
Newark, N. J.

180 No. Dearborn St., Chicago, Ill.
161 Summer St., Boston, Mass.
404 Arrott Bldg., Pittsburgh, Pa.
712 Harrison Bldg., Philadelphia, Pa.

"Reliability Their Main Feature"



J. S. SCHOFIELD'S SONS CO.,
Macon, Georgia

MANUFACTURERS OF

High Pressure Return Tubular Boilers, High Grade Stationary Steam Engines, Tanks, Stacks, Stand Pipes.

Heavy Castings and Wrought Iron Works.

RED CROSS
Emergency Accident Cabinet

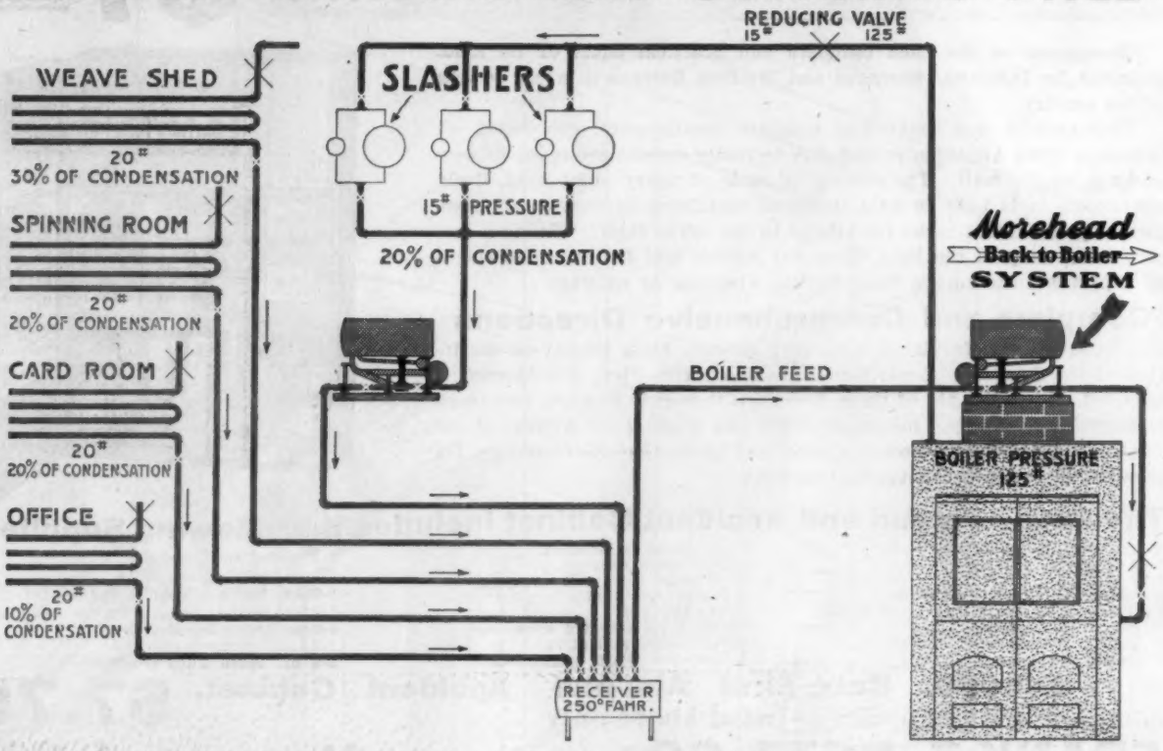
RED CROSS Emergency Accident Cabinets are being installed by many textile mills, as they find them indispensible in rendering first aid to the injured. The contents of this cabinet is complete in every detail, consisting of bandages in various widths, cotton, gauze, antiseptics, iodine—in fact everything that may be needed by a layman in rendering first aid.

This cabinet meets the requirements of the Compensation Bureau of Indemnity Insurance Companies who make an allowance for the installment of a cabinet.

We also manufacture other safety-first devices such as goggles, eye-protectors, stretchers, drinking founts, etc. Write for catalog today.

The Accident Cabinet Co., Kalamazoo, Mich.

COTTON WEAVING AND SPINNING MILL



Showing at a glance how the

Morehead
Back to Boiler
SYSTEM

is used in hundreds of America's Leading Cotton Mills

THIS ILLUSTRATION makes plain the application of the Morehead System in the cotton mill—shows how the condensation is drained from the steam lines and steam heated machinery and then returned under pressure to the boiler as pure hot feed water—in just the condition to use again with the least consumption of fuel.

Eliminates Sluggish Circulation in Your Steam Heated Machines

The way to get the most out of your slashers, calenders, dye vats and other steam heated equipment is to eliminate sluggish circulation—and sluggish circulation is impossible with the Morehead System on the job.

Summed up—an installation of the "Morehead" System simply means that you keep your machines *constantly* working at a high temperature through the perfect drainage of all condensation—and further, that you save a large per cent of your fuel.

Write Us Fully Regarding Conditions In Your Own Plant—and Receive the Free Advice of Our Engineers, together with a Copy of the Morehead Book.

Morehead Manufacturing Company

Cotton Mill Dept.

Detroit, - - - - - - - Michigan

415

BETZ FIRST AID AND ACCIDENT CABINET $7.75

Recognized as the most complete and practical outfit of its kind. Endorsed by Industrial Surgeons and Welfare Bureaus in every section of the country.

This cabinet is a small and compact arrangement, containing all necessary First Aid supplies and may be easily carried about the factory or hung on the wall. The cabinet is made of heavy sheet steel, finely enameled. It is built to hold standard containers of various supplies, including individual racks for bottles in the lower shelf. This is a feature found only in the Betz First Aid cabinet and its value is evident as it prevents the bottles from tipping, breaking or spilling.

Complete and Comprehensive Directions

For First Aid are furnished with each cabinet, being pasted on the inside of the door and in addition an authoritative First Aid Manual is included. With the aid of these directions it is easy to train and teach workmen how to apply intelligent First Aid pending the arrival of the Doctor. The directions are so clear and plain that the ordinary lay person can easily grasp the instructions.

The Betz First Aid and Accident Cabinet includes the following Supplies:

9-1 inch Gauge Bandages,
2-2 " " "
3-3 " " "
4-2 oz. Pkg. Absorbent Cotton.
24 Picric Acid Gauze Pads, (for burns)
6 Pkgs. Plain Gauze,
1 Roll Z. O. Adhesive Plaster,
1 Tourniquet,
1 pr. Dressing Scissors,
1 pr Thumb Forceps,
12 Wooden Tongue Depressors,
6 Cotton Applicators in glass tube,
1 Eye Dropper,
Safety Pins, assorted sizes,
12-12 inch Applicators,
1 Medicine Glass, graduated,
1 Eye-Cup or Douche,
1-2 oz. bottle Boric Acid,
1-2 oz. bottle Alcoholic Iodine,
1-2 oz. bottle Aromatic Spirits Ammonia,
1-2 oz. bottle Jamaica Ginger,
1-2 oz. bottle Castor Oil,
2-3 oz. tubes Burn Ointment.

2X4600. Betz First Aid and Accident Cabinet, complete with supplies as listed above only $7.75

FRANK S. BETZ CO., Hammond, Ind.

How Do You Deliver Drinks?

The accessibility of clear, cold drinking water and the way it is supplied to the workmen is a matter of extreme importance to every manufacturer. Consequently, hundreds of plants are today equipped with the most modern and economical solution to the problem. If doing this had not proved profitable, these concerns would again be using old cup and hydrant methods.

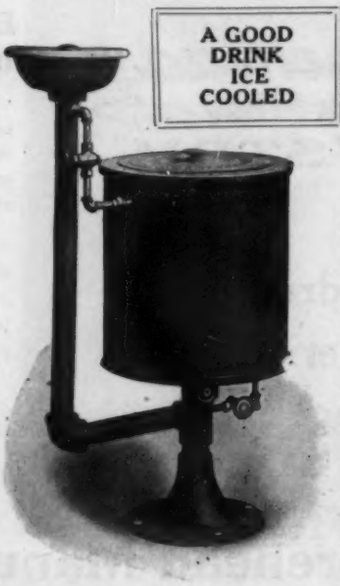
But they are not. Many are placing further orders. They have learned the practical results produced by

R. & S. FOUNTAINS

Write for Catalog.

RUNDLE-SPENCE MFG. COMPANY
Milwaukee, Wis.

The Fountain Is Cork Jacketed 15 1-2 Coils of 1-2 in. Brass Pipe and Keith Bubbler; Capacity Continuous Line of Users.



Drink right from the fountain without cups or contamination. The water is cooled as it flows from the municipal supply pipe through the cork-jacketed ice tank to the Keith Bubbler.

One supply of ice lasts through the hottest day and cools all the water ever required.

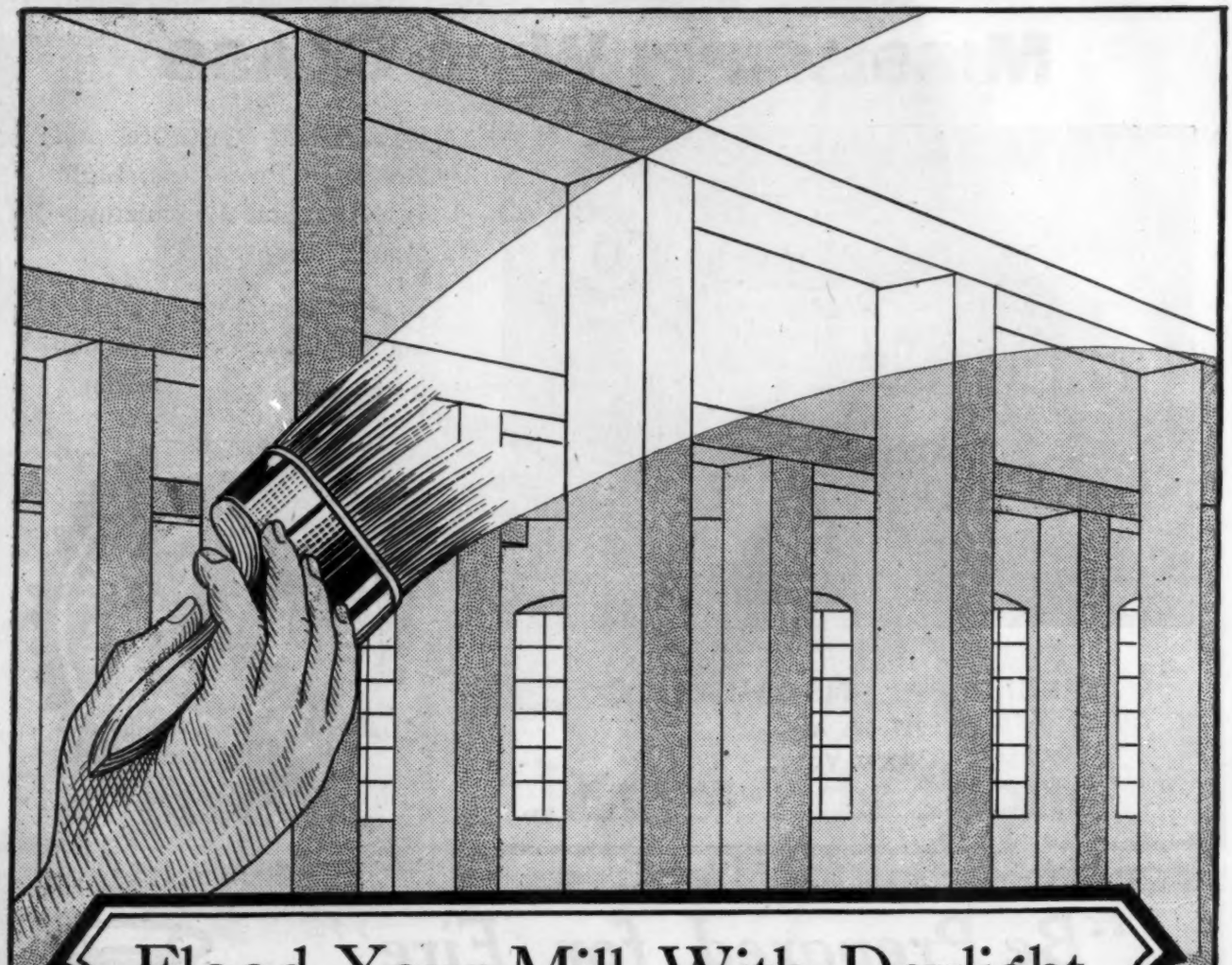
Everybody like the bubbler because it's sanitary.

GET OUR CATALOG

Send for our complete catalog, showing our Wash Bowls, Metal Lockers, All Steel Stools and Chairs with Inset Wood Seats, Stock Storage Racks, Metal Shelving, Metal Vault Fixtures, Improved Soda Kettles, 40 and 60 gallons, Water Heaters and Instantaneous Mixers, Bubbling Drinking Fountains, Work-Benches and Bench Legs, Drawing Stands, etc.

Attach to Municipal Supply

Manufacturing Equipment & Engineering Co.
136 Federal St., Boston, Mass.
Address all communications to Framingham, Mass.



Flood Your Mill With Daylight

Meet Rising Costs by Increased Production

Improved lighting will go far toward offsetting the burden thrust upon you by the war. Many skilled operatives will be called to the colors. They will be replaced by inexperienced workmen. To increase your production, or to maintain *even your present output*, your employees will need favorable working conditions. A most important consideration is that of light—*lots of it!*

GF No. 525 Factory Enamel will bring daylight into your mill or factory. It will enable your employees to turn out better work and more of it. It will help to prevent costly accidents and by conserving the *daylight*, will soon pay for itself in decreased bills for *artificial* lighting. GF No. 525 is not a "mill paint" but a high grade white enamel of porcelain-like finish. It *stays white*, may be washed time and again, but will not scale, powder, or peel off. Suitable for wood, concrete, brick and plastered surfaces.

Descriptive Booklet Mailed Free if Requested on Your Letterhead.

The General Fireproofing Company

Southern Sales Office—Atlanta

GF FACTORY ENAMEL

MISSISSIPPI WIRE GLASS

Postex Cotton Mill, Post, Texas

MISSISSIPPI WIRE GLASS CO.

217 5th Ave.
NEW YORK.

7 W. Madison St., Chicago, Ill.

4070 N. Main St., St. Louis, Mo.

is installed for Fire and Breakage Protection, Light Diffusion and Minimizing Cost of Maintenance.

Let us mail you samples and literature which will give valuable information.

MISSISSIPPI - WIRE - GLASS - CO. WG FIRE RETARDANT No. 32

"Be Prepared for Fire"

says the foresighted mill owner.

A certain mill owner once said: "When it comes to fire, I believe in preparedness. I carry fire insurance, to be sure, but no insurance settlement would cover my loss if my mill were to burn down. An ounce of prevention is worth a pound of cure any time, and that's why I insist that my mill be equipped with fire extinguishers—that will kill a good-sized fire before it can roar into a conflagration."

Are you prepared for fire in your mill? Remember that it always starts unexpectedly with a small blaze, and if you do not have a good extinguisher like the ACME at hand, it will doubtless consume your whole plant, as a cotton fire is one of the hardest of all fires to control. But the ACME will stop it dead before it gains headway.

Equip now with ACMES. It will not only banish the dread of fire, but your insurance company will lower your premiums if you install them.

ACME Fire Extinguishers are examined, tested and labeled under the direction of the Underwriters' Laboratories, Inc.

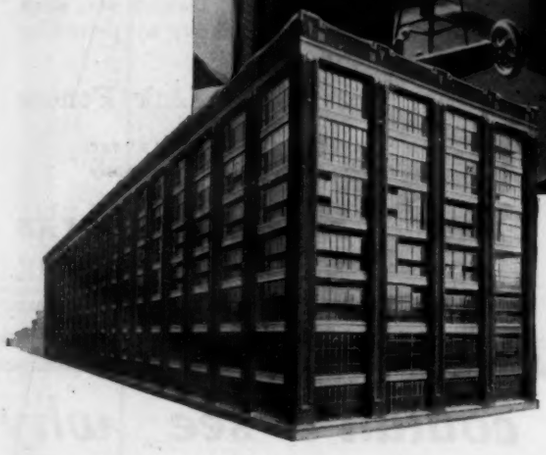
Let us send you bulletin. Ask for it today on a post card.

MISSOURI LAMP & MFG. CO.
ST. LOUIS, MO.

Acme Fire Extinguishers

Dayton Engineering Laboratories Co., Dayton, Ohio. Schenck & Williams, Architects.

Lupton Steel Sash, Counterbalanced Type, used throughout. Luton Steel Partitions, glass-l'ghted, for all offices.



Dividends from Sun and Air

Is your old factory handicapped by stuffy air and poorly lighted central bays? Plan the new one for maximum production! You need it—Uncle Sam needs it;—and your workers deserve a chance to do their best.

Even a wide building may be well ventilated and lighted by proper design. The factory here shown is 88 feet wide, 7 stories, with only 12-foot ceilings. Yet there is ample light and air for the accurate workmanship and intensive methods of manufacture demanded by the product,—the Delco starting and lighting system for automobiles.

How was it done?

FIRST, by putting special glass panels under the windows, adding 20 inches to their effective height and making a strikingly handsome external appearance. Benches, where needed, are placed at right angles to the walls.

SECOND, by using **COUNTERBALANCED** windows, instead of the ordinary pivoted type, which is relatively ineffective for ventilation. Upper and lower sash are hung over one pair of pulleys and open or close together. Thus top and bottom openings are equal, and the stuffy effect, with resulting loss of efficiency, sometimes found in otherwise well-planned factories, is avoided.

THIRD, by using glass-l'ghted steel partitions for all offices. The light yet rigid framing of these partitions offers minimum obstruction to light.

This build'ng is only one of many in whose design we have cooperated with the architect or engineer to produce better-than-ordinary results. We have prepared a booklet, "Air, Light, and Efficiency," describing some of the most striking. It's free on request.

Every new factory presents its own problems in lighting and ventilation. Let us help you solve yours.

David Lupton's Sons Company,
Amber St. and Allegheny Avenues, Philadelphia, Pa.

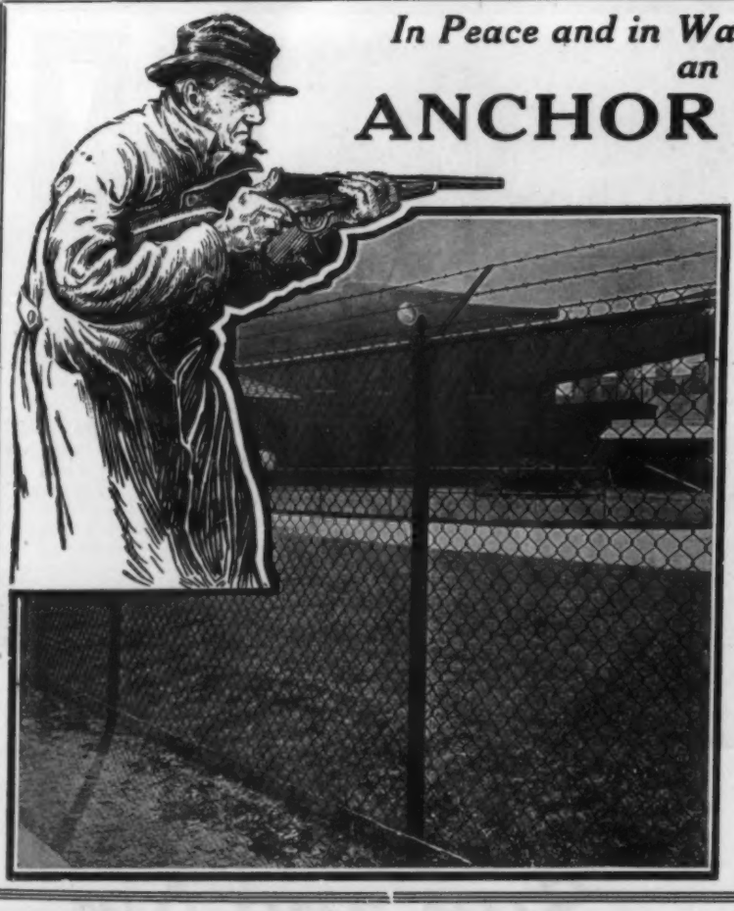
Lupton Products

- Lupton Steel Sash
  - Pivoted, Factory Type
  - Counterbalanced Type for factories
  - Counterweighted Type for offices
  - Power House Type
- Pond Continuous Sash for Pond Truss, sawtooths, monitors and side walls.
- Pond Operating Device for long lines of sash
- Lupton Rolled Steel Skylight
- Lupton Steel Partition and Doors.
- Lupton Steel Shelving

STEEL SASH — PARTITIONS — DOORS

LUPTON

"INVESTMENT VALUE"



In Peace and in War Protect Your Factory With an Unclimbable

ANCHOR POST FENCE

You may need "the man with the gun" too, but he cannot be everywhere at once.

THE United States War Department recognizes the futility of depending solely upon "the man with the gun." It is using thousands of feet of Anchor Post Chain Link Fence to back him up in safeguarding its property.

Any fence won't do. To afford real protection a fence must be strong, rigid, unclimbable and practically indestructible. The largest manufacturers of munitions, explosives, steel products, electrical devices, chemicals, textiles, etc., have provided the maximum of safety by protecting their properties with

Anchor Post Chain Link Fences

Our Catalog and the service of our Engineers will be furnished promptly

Anchor Post Iron Works

11 Cortlandt Street (13th Floor) NEW YORK

Philadelphia Cleveland Boston Hartford Newark

They couldn't see why they should use Upco—

but we convinced them and now their laundry is one of the brightest and cleanest you find anywhere.

Their plant is flooded with daylight, their lighting bills are reduced, their working people encouraged to greater cleanliness and they can do more and better work.

Steam and water can't hurt or darken these walls.

UPCO Porcelain Enamel reflects all the light in every corner. It will retain its high glossy, tile-like white finish no matter how often washed, and will positively stay white longer than any other white made.

Many tests have shown that UPCO Porcelain Enamel, applied alongside any other mill white, proves its superiority, now and years later.

Upco QUALITY

Accept no substitute. See that you get UPCO QUALITY.
Write for our valuable book "Light Without Power." A post card will do.

The Ullman-Philpott Co.

Industrial Paint and Varnish Manufacturers

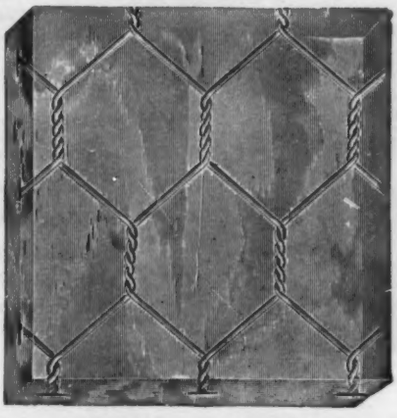
Cleveland, : : : : Ohio

WIRE GLASS

POLISHED—ROUGH—RIBBED—HOLLY

Rough, Ribbed and Figured Glass in All Thicknesses

Our Products are of Superior Quality and Fine Appearance



Fully Approved by National Board of Fire Underwriters

For Protection of all Openings from Fire Exposure

"HOLLY"

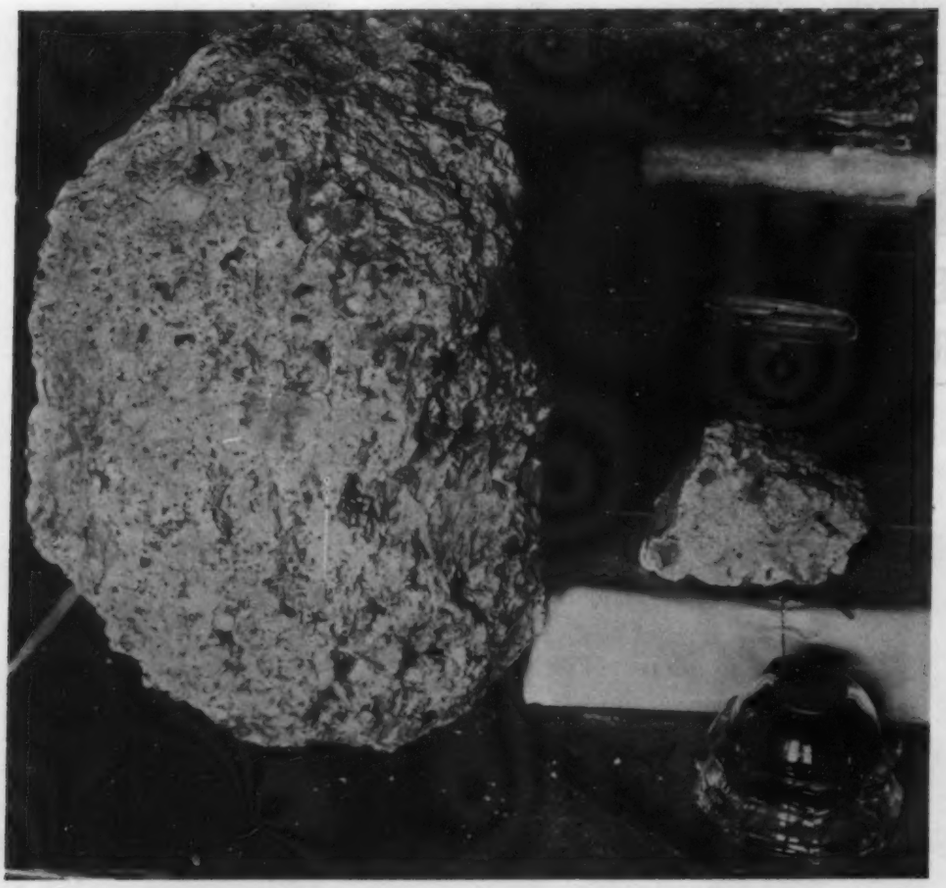
WIRE GLASS for fire prevention and fire protection. Our WIRE GLASS products are identified by three twists in the vertical sides of the wire mesh used in the manufacture of the glass, and this identification mark shows the approval by the Laboratories of the Fire Underwriters.

Buy and Use Approved Wire Glass

Our Products for Sale by All Leading Jobbers of Glass

The Western Glass Company

Streator, Illinois



Will Slag Concrete Stand the Test of Time?

Here's the answer

Slag Concrete drilled and wedged from exposed corner of foundation (4 feet above ground) to blowing engine, Williamson Furnace, erected over 30 years ago at Birmingham, Ala., now being dismantled, May, 1917.

Picture shows sample of this Slag concrete on exhibit at Annual Convention American Society for Testing Materials, Hotel Traymore, Atlantic City, N. J., June 26-29, and permanently at offices of the

Birmingham Slag Co.,
711 Empire Bldg., Atlanta, Ga.
1607 Jefferson Co. Bank Bldg.,
BIRMINGHAM, ALA.

Perfect White Walls and Ceilings

The photograph shows the waiting room of the Grand Central Station at Cincinnati which was finished with Wolf's Mill White. This job has been pronounced one of the most perfect white jobs in the country.

The superiority of

WOLF'S MILL WHITE

is unquestioned and its use is spreading every day. The entire plant of W. H. Winstead, Goldboro, N. C., has just been finished with it, and many other of the South's best cotton mills, including the Henrietta Mills, Hawthorne Spinning Co., etc., are using our material.

Wolf's Mill White meets every requirement of a superior mill white. It is guaranteed to stay white. Can be applied to wood, plaster, brick or concrete, and dries as hard as china, will not crack, peel or blister, and steam or moisture has no effect on it. Washable and sanitary.

Free sample furnished any mill on request. Write today.

Leon L. Wolf Paint Company,
304 Lincoln Inn Court, Cincinnati, Ohio

Men Comfortably Housed

are more productive, happier and contented.

Ready-Bilt Steel Portable Cottages

will solve your housing problem.

They are quickly and easily erected,—they are strong, fire proof, durable and comfortable. All parts sectional and interchangeable. Easily moved.

We specialize in Portable Garages, Warehouses, Store Rooms, School Houses, etc.

Whether you need a portable steel building immediately or not write *now* for details. Learn about Ready-Bilt Economy.

The Canton Metal Ceiling Co.

1961 Harrison Ave., S. W., Canton, Ohio

Everywhere under the sun—wherever roofs are laid—Certain-teed stands out for two things:—efficiency and economy. For textile mills, power plants, warehouses and out-houses with either flat or pitched roofs

Certain-teed
Roofing in Rolls

is the most economical and efficient type of roof, because the first cost is less than that of metal, wood shingles, or tar and gravel. This is particularly so now, because of the present high prices of some of these materials. Certain-teed costs less to lay than any other kind of roof. It will not rust, is not affected by fumes, gases and acids, coal smoke, etc.; is light weight and fire retardant. Every rain washes it clean, and it does not melt or run under the hot rays of the sun, nor can it clog gutters and down spouts. It is the best quality of prepared roofing. It pays to get the best. The only difference between the first cost of a good roof and a poor one is in the materials—the labor, freight, etc., cost the same on both. As Certain-teed is guaranteed for 5, 10 or 15 years according to thickness, (1, 2 or 3 ply) it will be in splendid condition years after a poor quality roof has to be replaced.

Certain-teed roofing is put up in rolls, 32" wide containing 108 sq. ft. and includes nails, cement for laps and full directions for laying.

Certain-teed
Slate Surfaced Shingles

For churches, cottages and similar buildings in mill villages these shingles have all the advantages of Certain-teed Roofing, plus artistic beauty; not bulky, uniform in weight, quality and appearance. They need no paint, are pliable, eliminate waste and misfits, can't curl, buckle, rot or crack. Guaranteed for 10 years.

They are put up in wooden crates, each containing 212 shingles. Two crates cover 100 sq. ft. Gross weight 240 lbs. Each shingle measures 8" x 12¾" and should be laid 4" to the weather.

Certain-teed
Paints and Varnishes

We are prepared to meet specifications for all kinds of paints and varnishes used in mill districts. Items of special interest include Mill White, Floor Varnish, House Paints and Metal Paints.

Certain-teed Porducts are handled by dealers everywhere, but if your nearest dealer cannot supply you, write our nearest sales office.

CERTAIN-TEED PRODUCTS CORPORATION

General Roofing Mfg. Co., Gregg Varnish Co., Mound City Paint & Color Co.

New York Chicago Philadelphia St. Louis Boston Cleveland Pittsburgh Detroit Buffalo San Francisco Milwaukee Cincinnati New Orleans Los Angeles Minneapolis Kansas City Seattle Indianapolis Atlanta Richmond Grand Rapids Nashville Salt Lake City Des Moines Houston Duluth London Sydney Havana

The Avondale Mills, Sylacauga, Ala.

The electrical wiring and the installation of all electrical equipment was done in the three big mills of the Avondale Mills while they were in operation without stopping the machinery, except where necessary changes in shafting and belts had to be made.

The installation consisted of 3500 horsepower, two of the mills being changed from steam to electric drive, and the third was a new building.

The work was done by our organization under three separate orders—the first was for wiring and lighting two of the mills—the second for the power installation in the same two mills—and the third for wiring, lighting and power installations in the new mill.

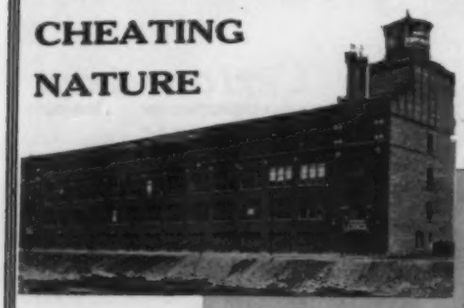
When you have any electrical, heating or plumbing work in either mill or mill village, our organization can give you the same efficient and satisfactory service that we have rendered scores of other big Southern textile plants. We shall be pleased to furnish you estimates on request.

WALKER ELECTRIC & PLUMBING COMPANY

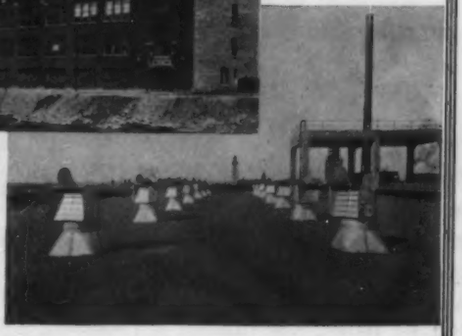
PLUMBING, HEATING AND ELECTRICAL CONTRACTORS

ATLANTA, GA. *ROME, GA.* *COLUMBUS, GA.*

AIDING NATURE is not CHEATING NATURE



The "House of Kuppenheimer," Chicago, Ill., an example of a Swartwout-Ventilated clothing plant. Note ventilators on tall stacks.



The roof of a Trenton, N. J. Mill—14 Swartwout Rotary Ball-Bearing Ventilators, showing louvres in closed position.

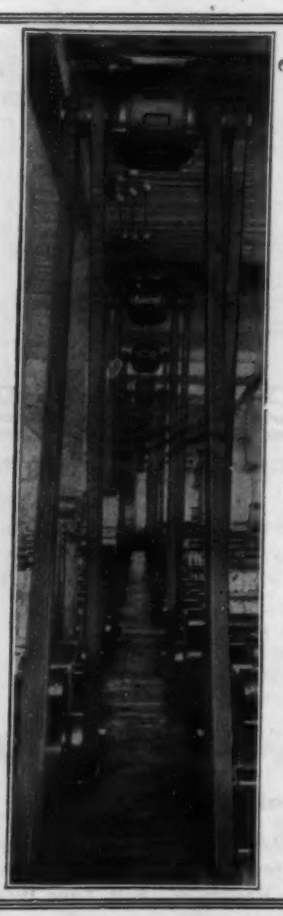
SWARTWOUT ROTARY BALL-BEARING VENTILATORS

help nature provide the genuine ventilation of real, fresh air. The passing breeze itself sucks out the vitiated inside air. The operation is entirely automatic, and no attention is required except to open the louvers or dampers by simply pulling a hand chain to give the desired circulation.

The free ventilation handbook "Gospel of Fresh Air" tells the whole story. Send for it.

The Ohio Blower Co.

5151 Perkins Ave., Cleveland, Ohio.



Induction Motors

for all Textile Power Requirements

Individual Drive
Two Frame Drive
Four Frame Drive
Group Drive

Let Us Figure on Your Requirements

ALLIS-CHALMERS MANUFACTURING COMPANY

Milwaukee, - Wisconsin

Now is the Time to Improve Your Lighting System

"No matter how the mill is lighted, if it can be better lighted, better or more work must result, up to a definite increase of efficiency in the workman."—Electrical World.

PRESENT conditions demand the highest possible efficiency. This means wiping out the vast sum of $28,000,000 per year in spoilage due to poor artificial lighting.

It means the prevention of 20,000 fatal accidents and 125,000 non-fatal accidents per year due to the same cause.

It means making useful the millions of dollars worth of time wasted every week on account of poor lighting.

Now is the time of all times to investigate your lighting system and make improvements. Conservation of men, materials and money all demand it.

Other improvements that you have considered may mean too big an outlay. An improved lighting system doesn't. It will pay for itself in a very short time.

The lighting system of most mills needs improvement. Don't say that yours doesn't need it until you have had expert advice. Our Engineers are ready to serve you without obligation.

Westinghouse Lamp Company

165 Broadway, New York

Sales Offices and Warehouses Throughout the Country

WESTINGHOUSE LAMP COMPANY U.S.A. TRADE MARK W WESTINGHOUSE MAZDA LAMPS

GUARANTEED BY THE NAME

ELECTRICAL
Supplies and Apparatus

QUICK SERVICE is one of the essentials of the electrical supply business, likewise one of the chief assets of the Carter Electric Company, for it is on that basis we have rapidly grown to our present size.

Knowing the needs of Southern mills we keep at our finger-tips large quantities of everything one is apt to require on short notice.

Our 800 page catalogue with illustrations, descriptions and prices will be of great assistance to you and can be had merely for the asking.

CARTER ELEC. CO.
72 N. BROAD ST.
Atlanta, Ga.

The Heart of an
ECONOMY
renewable cartridge
FUSE

is the "Drop Out" Renewal Link. It is the only thing you have to replace in order to renew a blown "ECONOMY" FUSE. The expense is trifling, compared to the utter extravagance of discarding an entire fuse after it has operated.

Use Economy Fuses in your plant and by their use cut yearly fuse maintenance bills a full 30 per cent.

Write for free Samples. Test them. Let the results speak for the economy and safety of Economy Fuses. Be sure to ask for Catalog 39.

Economy Fuse & Mfg. Co.
Kinzie and Orleans Sts., CHICAGO.
At Leading Jobbers.

T. H. McKINNEY
INC.
CONTRACTING ELECTRICAL ENGINEERS
ATLANTA, GA.

The quality of your Electrical Installation should be considered as equal in importance to the efficiency and design of your machinery.

We specialize in Textile Mill and Village Lighting. We are glad to furnish estimates on request.

over the entire mill. All electrical wiring etc. to be done by J. M. CLAYTON. Atlanta. Ga.

Put This in Your Specifications

and be assured that the wiring of your mill is done right and all lights and electrical equipment installed correctly by experts who specialize in textile mill electrical work—a concern who has wired and installed equipment in such mills as Fulton Bag & Cotton Mills, Bibb Mfg. Co., Texas Cotton Mills, Mandeville Mills, and scores of other big textile plants.

We will be glad to furnish estimates on any electrical work in the mill or mill village, large or small. May we serve you?

J. M. CLAYTON, *Electrical Contractor* ***Atlanta, Ga.***

LINCOLN MOTORS

SIMPLICITY HONESTY

Extra Insulation

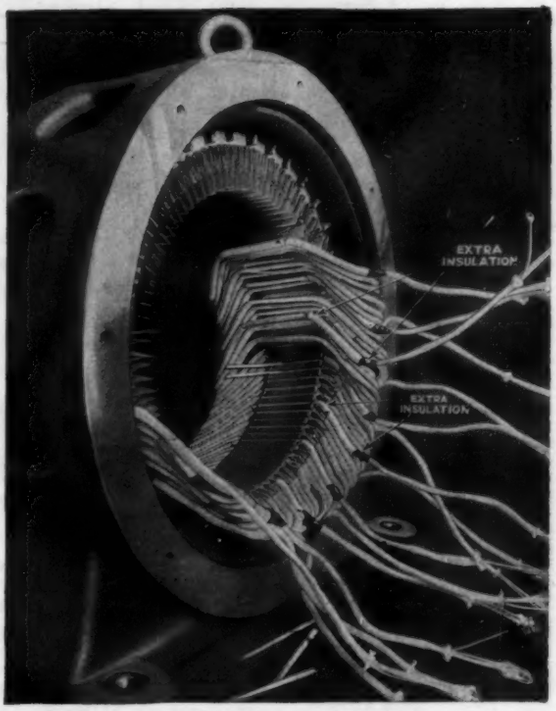
Lincoln Motors are doubly protected at the place where 90% of all induction Motor failures occur.

Wherever the different phase windings approach each other, two thicknesses of oiled muslin are placed about the windings in addition to the regular insulation.

The possibility of breakdown is thus practically eliminated.

Write for Bulletin on Motors 101-N

"Link Up with Lincoln"



Stator of Lincoln Motor, showing the extra taping of oiled muslin at points where phase windings approach each other.

This standard Lincoln Motor has operated under water for over 3 years without damage to windings.

The Lincoln Electric Company

Cleveland. O. **Charlotte, N. C.**

New York City (Singer Bldg.)
Columbus
Grand Rapids
Philadelphia
Pittsburgh
Syracuse
Buffalo
Chicago
Detroit
Toronto, Canada

Agencies in other principal cities

Now—

more than ever before

should manufacturers consider seriously the coal situation, not only with a patriotic economical view, but because of the price of coal.

The coal situation is becoming alarming, the supply is becoming scarcer and scarcer. Last winter coal prices were high, due to car shortage, etc., but this winter, the prices will go even higher for many obvious reasons.

During the past few months textile mills have seen the advantage of buying central station power.

While coal has been climbing hand over fist during the past year, electric power rates have remained stationary. The textile manufacturer who burns coal when he can get his power much cheaper and with less trouble, is certainly not answering the President's plea for economy.

Every textile mill in the country will eventually use electric power, and it's the wise manufacturer who adopts it now before he burns up more money in a boiler room.

Central Station Power

is many times cheaper than power furnished by a steam plant. But perhaps the greatest advantage of electric power is the increased output per machine, the lower cost of unit production, and the flexibility and freedom to make extensions or alterations and to operate overtime at a proportionately lower cost.

Your better judgment tells you to change over to electric drive, and such an investment will pay dividends.

If your mill is situated on our power lines, we can supply electric power service that is always steady and satisfactory and will contract for a period of years at a fixed rate, and you will bother no more with the uncertainties of coal prices, and the additional expense of boiler room operation.

If your mill is not situated on our lines, the City of Augusta has many advantages to offer you. The climate the year 'round is especially suited for the successful operation of manufacturing plants of this kind; there are many ideal factory sites on our lines; an unlimited supply of high class raw materials; seven railroads centering in Augusta; the Savannah River affords water transportation the year 'round, and freight rates on both facilities are extremely low, and the central location of Augusta is ideal for distribution to local markets such as Atlanta, Macon, Savannah, Charleston, Charlotte, etc., with through service to all points.

Labor of a higher than average class is in abundance in Augusta. Men and women, girls and boys, who cannot now secure positions elsewhere in the city, would welcome the opportunity of a position in a textile mill.

For further information address

COMMERCIAL DEPARTMENT

Augusta-Aiken Railway & Electric Corp.

Augusta, Georgia

Speed up with Electric Power

75% of all electric power used in the textile mills of this country passes through G-E Motors

HERE are some of the ways in which modern industry has been speeded up by putting electric power to work in the right place.

Metal mines have boosted output to meet world-wide demands. Great central power plants in place of small local plants in coal mining areas now supply cheaper electric power per ton output for each mine. All tonnage records have been smashed in the steel industry. Greater automobile output has lowered prices and given better road transportation. More and better cloth has been produced at lower power costs.

The engineering problems solved in putting electric power to work in these and other industries were many and intricate. Production of electrical equipment suited to this work and in quantities required is an important part of this company's service to American industries.

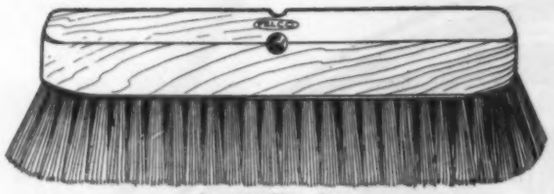
Any problem involving the use of power can be simplified by the application of electricity. The General Electric Company is well equipped to lend valuable assistance in working out such problems and is glad to co-operate with manufacturers and engineers in every possible way.

G-E Motor Drive

GENERAL ELECTRIC COMPANY

General Office, Schenectady N.Y. Mill Power Dept. Boston, Mass.

7178



Straight Floor Sweep

FELCO **FLOOR SWEEPS**

are made to last. Your broom expense will be practically eliminated, for Felco Sweeps outwear a dozen brooms.

Made in any width for any purpose.

Write for prices or may we send you a trial broom?

D. D. Felton Brush Co., Atlanta, Ga.

S. A. Felton & Son Co., Manchester, N. H.

Manufacturers and Repairers of all Kinds of Brushes

Curved Floor Sweep for Spinning Room Alleys

SIMPLICITY

An excellent and unique hand threader in a reliable shuttle.

Straight or curved saw cut.

Write for sample set of threader eyes.

SHAMBOW SHUTTLE CO.
Woonsocket, R. I.

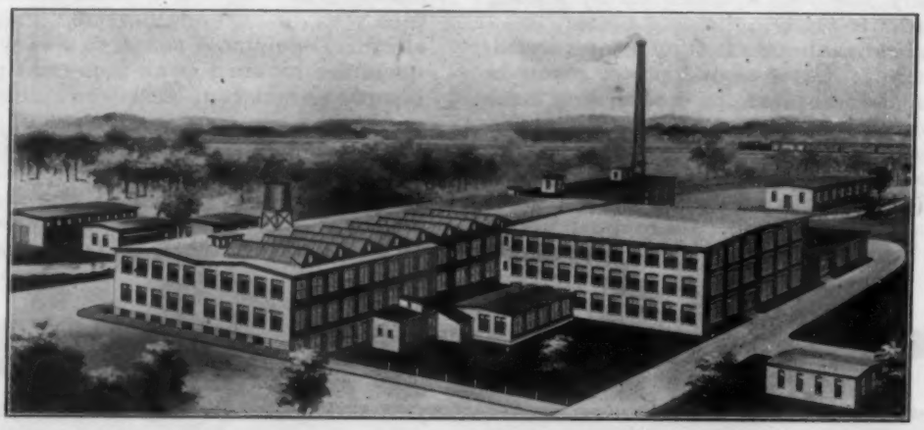
P. B. McMANUS, Pres. and Treas. E. J. McCAUGHEY, Secy. and Mgr.

Home Bleach & Dye Works, Inc.

Established 1881.

Dyers, Bleachers and Mercerizers of Cotton Yarns—in Skein and Warp

Daily Capacity 50,000 Lbs.



PUT YOUR PROCESSING IN OUR HANDS if you want to be sure of results. We have had 35 years of experience in Dyeing, Bleaching or Mercerizing and have every modern equipment operated by skilled employees.
Pure Bleaching for Piece Dye Work. Fancy Colors Dyed to Match Samples. Special Finish. Special Dyeing of Cotton Yarns for Silk Goods in Black and Colors.
Also—Facilities for Winding Cotton Yarns on Paper Cop Tubes for the Shuttle, also on Beams and Cones and Parallel Tubes.

Office and Works at Pawtucket R. I.

JUL 19 1917
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COTTON

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When changing address, *notify us*, not the postmaster. Always give the old address as well as the new one.

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Volume 81. **Member Audit Bureau of Circulation.** **Number 9**

This Issue 5200 Copies.

DO YOU READ EACH ISSUE OF COTTON AS CAREFULLY AS THESE EXECUTIVES?

Recently we have received the following two letters. The first comes from the treasurer of six Southern mills:

"If I remember correctly, a year or two ago your excellent journal carried a splendid write-up of the Co-operative Store of the Hampton Group of Mills at Columbia, S. C. I am considering—just considering at the present stage—the establishment of some such enterprise as this for the benefit of the employees of our mills, and would like to get as much information on the subject as possible. I write to ask, therefore, if you will be so kind as to have a search made for a copy of the magazine in which the article referred to appeared. If you succeed in finding one I will appreciate your sending it to me, and will of course gladly remit the cost with whatever addition you may suggest for the trouble of your assistant in finding it."

The second letter was written by the manager of a Georgia cotton mill:

"I would like very much to obtain a copy of COTTON for December, 1914, or January, 1915, as I think it was this issue that contained an article with reference to the Hampton Cotton Mill Co.'s Co-operative Store at Columbia, S. C.

If you could send me a copy of the issue containing this article I can have a typewritten copy made of same and return the copy of the magazine to you.

I would thank you very much for any other information, which you may have with reference to the Co-operative stores among the Cotton Mills in the South.

Anything which you may do in regard to this matter will be appreciated by,—"

It is a coincidence that both letters refer to the same article which appeared in the January, 1915, issue of COTTON or over two and a half years ago.

Often times an article in the reading pages or an advertisement may not appeal to you as being of much importance to you personally or to your mill at the present time. However, a year from now, two years from now, or perhaps longer, you may find need for exactly the information given you in the present issue of COTTON. Are you reading each issue with sufficient care to be able to refer back to articles and advertisements as these two executives were able to do? It is worth your consideration.

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ADVERTISING

Advertising is the motive power of modern business. The man who has a product that the people want and does not tell them about it, is living in the Sahara of his own barren life. He is a derelict lost in the empty desert of his own ignorance or folly.

The true function of advertising is to suggest rather than to compel, to inspire rather than to direct, by creating, through the dominating idea used in advertising, other ideas in the mind of the reader that he or she will catalogue as personal, intimate opinions of the product and its value.

All advertising that suggests, leads, and inspires, is good advertising. Th's is the elementary fundamental of all publicity that wins increasing sales.—*The Wallace.*

Are You Opposed to Using Low Cost Cup Greases?

How do you know that you are now using the most economical cup grease unless you have tried out several varieties?

Your opposition to trying a certain brand of cup grease may amount to the same thing actually as opposition to using low cost greases.

We can demonstrate to you that Dixon's Graphite Cup Greases cost less than others, while at the same time giving the most perfect lubrication. The explanation is found in the purity of the Flake Graphite used in Dixon's Cup Greases.

DIXON'S GRAPHITE Cup Greases

Graphite coats the bearing surfaces with a smooth, frictionless veneer, and as a consequence much less grease is used. The small quantity of Dixon's Graphite Cup Grease, therefore, that it is necessary to use to give perfect lubrication is the reason why it costs less than other cup greases.

Write for Booklet No. 34-R

Made in Jersey City by the

JOSEPH DIXON CRUCIBLE CO.

Established 1827

DRAWINGS OF YOUR PLANT

This is a Photo of Our Drawing of the Springstein Mills, Chester, S.C.

WE CAN MAKE A PICTURE LIKE THIS FROM THE ARCHITECTS BLUE PRINTS BEFORE PLANT IS ERECTED

RUDOLPH J. SHUTTING CO. CHATTANOOGA TENN.

SUCCESSFUL SOUTHERN BOBBIN MAKERS

JORDAN MFG. CO., Monticello, Ga.

"An Ounce of Prevention Is Worth a Pound of Cure"

CLINTON CAM COMPANY
CLINTON, S. C.

Our Cam Device Reduces Shock and Prevents Breakage of Various Parts of the Loom.

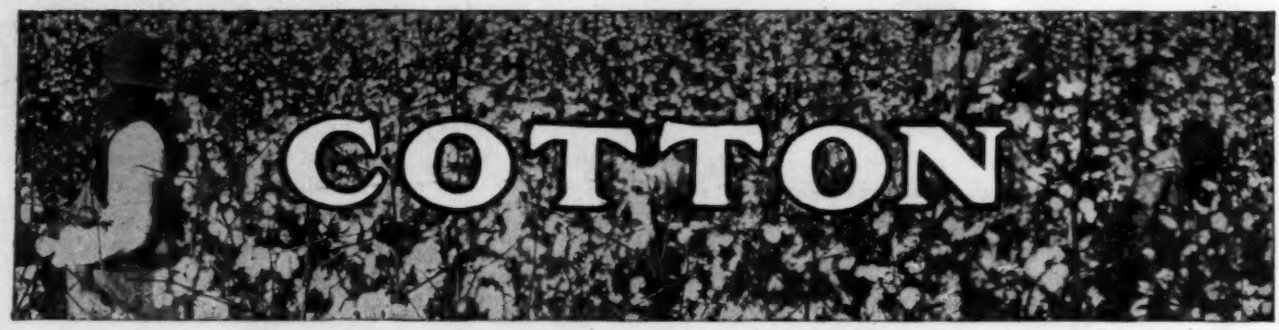
EVERY LOOM HARNESS

Is Perfect if it is a GARLAND

We do not hesitate to throw out every loom harness which has twisted eyes or shows imperfect knitting or finishing and frequently throw out harnesses which probably would not be criticized by the user. This policy insures to the user not only harnesses which are as good as can be made, but harnesses which are always uniform in quality.

GARLAND MFG. CO.
SACO, MAINE

G TRADE MARK



July, Nineteen-Seventeen.

The Deceptive Shingle.

Old customs, however bad, die hard. Born of necessity, serving a useful purpose in their day, they finally become so strongly intrenched in the public mind, that it is extremely difficult to induce the general public to accept improvements even though the merits of the new are abundantly proven, and their benefits to the public beyond question.

The wooden shingle is a case in point. Coming into use in the days of our forefathers, because nothing better was known or available, the raw material abundant, made mostly at or near the place of using with crude labor and no machinery, the money cost being very slight, it was the natural and correct thing for our ancestors to use when needing coverings for their homes and places of business.

But changing conditions create a need for "something better" in every department of our communal life.

The ox cart had to give place to the Conestoga wagon, which in turn gave way to the spring wagon, then came the automobile, and the auto-truck.

The wooden ship has been superseded by great structures of steel which are safer in storm, and infinitely safer against fire. This list could be extended indefinitely, but it is unnecessary.

The shingle of today is the degenerate descendant of the shingle or clap-board of our ancestors. Then made of the best oak, chestnut, pine, or other durable timber, with the sap wood discarded, shaved smooth with a drawing knife, such shingles always could be counted on for 50 years of service, and many of those old roofs lasted 75 years.

The modern shingle is typical of much of the work of our day. About ½ inch thick at the butt end running down to a feather edge at the thin end, sawed across the grain of the wood, it gives poor service for six or seven years, and then a new roof becomes necessary.

It is a pre-eminent success as kindling wood, and is the terror of insurance companies.

But "daddy" got along with the shingle roof and so we hang on to the delusion that it is good enough for us. It probably is good enough for us measured by the apparent quality of our brains, but is very bad for us when measured by the strain on our pocket books occasioned by its short life, and incessant repairs.

But "daddy" lived in an isolated house, or mayhap in a small village, while we live mostly in big towns and cities. When "daddy" had a fire it was generally a one-man fire. But things are different now, and when a fire hits us, and there is a good breeze, we see the shingle roof in the fullness of its glory.

A spark from the original fire lights on a shingle roof two or three hundred yards away, and biff! We have a second fire, a few minutes and we have a third, a fourth, a fifth, and then general conflagration.

The very recent conflagrations in Paris, Texas, Nashville, Tenn., and Augusta, and Atlanta, Ga., furnish all the confirmation of the previous statement that is needed.

Quite recently, a big lumberman of Texas, Kirby by name, who does not make shingles, and who ought to have more sense, in an impassioned appeal in behalf of the wood shingle, is reported in the press as having made the statement that the wood shingle costs 100 per cent less than metal roofing. This may be so, though we had not heard of it, for 100 per cent less would mean *nothing* and we did not know that the dealers were giving away wood shingles. However, that is more than they are worth, for even if given away they are not worth the cost of putting them on.

In the light of present day facts any man who advocates the wood shingle ought to be paddled (not with a modern shingle, for if you look hard at one of these it will split and certainly would be no good for paddling) with an old fashioned oak clap-board.

Storage of Bituminous or Soft Coal.

The Underwriters' Bureau of the Middle and Southern states calls attention to the fact that every year a number of fires are reported due to spontaneous ignition of piles of soft coal, stored either in coal storage buildings or in piles outside.

In 1916 there seemed to be more fires from this cause than usual. It may be that the unsettled business conditions, both at present and in prospect, have led manufacturers and others to lay in a larger supply of fuel than is their usual custom.

If this is the case, and a large amount of coal is stored, careful consideration should be given to safe-guarding the property against fire originating in such storage. The storage of soft coal involves a distinct and unavoidable hazard. As safe-guards they suggest the following:

1. Storage should be kept if possible well away from the main buildings of the plant. Under no circumstances should it be piled up against a frame building.

2. If outside space will permit, the piles should be made low (not higher than 12 feet) and of large area, rather than of small area and piled high.

3. If wet coal is received, it should be dumped around the edges of the pile, or in some location where the air can get to it freely, and where large quantities of other coal will not be packed on top of it.

4. If large amounts are stored, it is a good plan to insert wrought iron pipe 2 or 3 inches in diameter into the piles as they are built up. The lower ends of these pipes should be at different heights from the ground throughout the piles, and probably one 3-inch pipe to every 400 square feet of surface would be ample. This arrangement allows air to circulate freely through the coal pile, and is a great aid in preventing spontaneous ignition.

The pipes should preferably be perforated, and it is a good plan to lower a thermometer occasionally through one of them to get a temperature reading from the center of the pile.

The Wooden Shingle Less Used.

What a factor in the roofing market prepared roofing has become within the last 15 years is shown by the figures published by the United States Department of Agriculture, through the Forest Products Laboratory, located at Madison, Wis. These figures also indicate why prepared roofing is particularly the target for the attacks of wooden shingle manufacturers. In 1904, 17,500,000 squares of wooden shingles were marketed. By 1914, this production had decreased to 14,430,000 squares, whereas in the same period of time the production of prepared roofing materials increased from 3,267,000 squares in 1904 to 11,100,000 in 1914.

Much of the increase in the sale of prepared roofing has taken place since the asphalt shingle was first placed on the market. While much prepared roofing may be classed as only slightly resistive, nearly all of it is preferable to the wooden shingle for the reason that it does not ignite so readily and does not contribute to the flying brand hazard.

Rat Incendiarism.

Edward Howe Forbush, Massachusetts State Ornithologist, writes to *Fireman's Herald:* Fires are attributed commonly to rats and matches. Rats are attracted by the phosphorus contained in matches, or by the paraffin in which some manufacturers of matches dip their goods. Matches have been found in rat nests, and in one case at least a nest was found which had been set afire by such a match which nearly caused a fire on the ship "Revenge." Rats' winter nests are made commonly in buildings, between walls and near chimneys, where it is often very hot. The nests are built of dry and inflammable material. When rats take matches to these nests, fire is very likely to result, either from the friction of the rats teeth or from the heat, which readily ignites matches containing a large percentage of phosphorus. It is believed that a considerable proportion of the great loss of life and property by fire in the United States is due to rats alone, for the foregoing is not by any means the only way in which they set fires. Fires in mills have been traced to the spontaneous ignition of oily rags and cotton waste carried under floors by rats and mice. Gas explosions and resultant fires have been caused by rats eating away lead pipes leading to gas meters, and human lives have been put in jeopardy through the leaking of gas from this cause even when no fire resulted. Rats often gnaw away the insulation from electric wires, and in recent years this has become probably the most fruitful cause of city fires that can be attributed to rats. Insurance companies, a few years ago, estimated the fire loss in the United States due to defective insulation of wires at $15,000,000 yearly, a large part of which is directly due to the depredations of rats. The moral of this story is—get rid of rats.

Wire Glass Superiority.

The use of fire resistive building materials is economy from more than one viewpoint. In addition to preventing the spread of fire, high-grade materials approved by underwriters' engineers are more durable and serviceable than cheaper substitutes. This is true, for instance, of asphalt shingles. A conspicuous example of this additional advantage of fire resistive goods was seen in the effect of the concussion of the Black Tom Island explosion on ordinary window glass as compared with its effect on wire glass.

Damage to window glass and plate glass fronts caused by this explosion totaled a million dollars while little or no damage was done to wire glass. The Black Tom Island explosion occurred at night when factories and streets were deserted. Had this explosion occurred when factories and streets were occupied, undoubtedly loss of life and numerous injuries would have been added to the enormous property destruction. Even where cracked, only exceptionally large pieces of wire glass were blown in and while in several instances the concussion was so sever as to blow in steel sash, the glass plates remained intact.

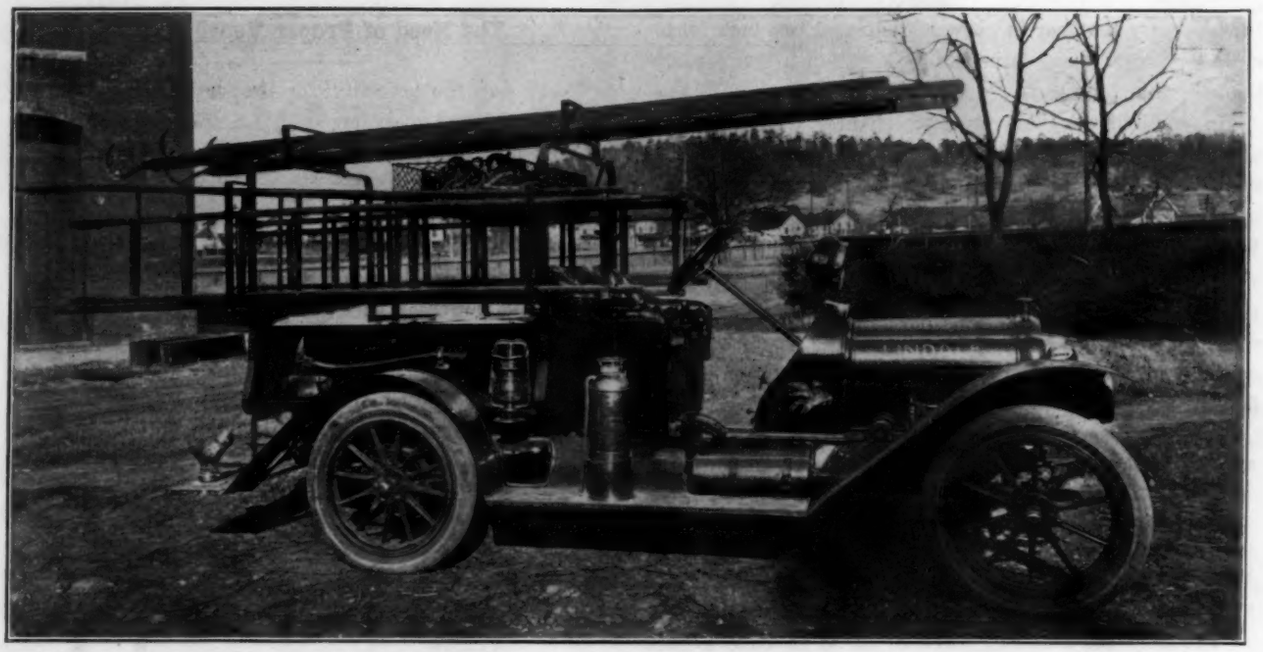
When advocating the use of high quality materials for fire resistance, it is well to emphasize also other superior qualities characteristic of these materials.

Don't Be Jealous.

Why should we take umbrage if some one else is called upon to do a thing which only our conceit may make us think we could do better? Why not let the chosen one go ahead and do it, and if he succeeds, pat him on the back for being as smart as we are? This is the broad view, the liberal road to take, and the one that makes quicker and more certain our popularity. Did you ever see a jealous person who is a popular person? What matter's it who does a thing, if it's done right and others benefit from it?

Life's too short and the future's too uncertain to be fussing about who's going to do a thing. If it seems a good thing and you think it ought to be done, "go to it" and if the other fellow squeals because you've done a good turn and something he should have done, but whom you "beat to it," jut say, "God help the poor 'critter'," and let it go at that!—*The Fulton.*

Join your association. There may be reasons why you should deceive others, but there is no excuse for you to deceive yourself.



THE COMBINATION TRUCK AT THE MASSACHUSETTS MILLS IN GEORGIA, LINDALE, GA., BUILT IN THE MILL SHOP AND MANNED BY THE MILL'S PRIVATE FORCE.

Fire Protection In Factories.

BY SIDNEY J. WILLIAMS.*

The recent factory fires in Pittsburgh and Brooklyn, in which 26 employes lost their lives and many more were seriously injured, show the need of fire protection and prevention. The money cost of fire also is great. In Wisconsin every year the total cost of fire is as great as if the city of Fond du Lac, La Crosse or Sheboygan were destroyed.

This tremendous waste of life and property cannot be prevented by fire departments and fire escapes alone. In the Triangle Waist company, the Binghamton Clothing company, and other fatal fires, the buildings were provided with fire escapes and the department did its best, but the fire spread so rapidly that both the building and many of its occupants were doomed.

The only way to secure any marked improvement is by fire prevention. With fires, as with accidents, the principal cause is carelessness and disorder. The Triangle Waist company fire was started by a match or cigaret thrown into waste material. All rubbish and all inflammable liquids or paints used in the shop should be kept in metal safety cans with self-closing covers. Ashes should be kept away from wood partitions or floors and no paper or wood should be piled with the ashes. Gasolene requires the greatest care in handling. A pint bottle of the fluid left with the cork out, has been known to form sufficient vapor to completely demolish a small house.

Next to carelessness the most frequent cause of fires is defective heating and lighting equipment. Boilers and furnaces should be well protected, placed in fireproof rooms, if possible, and all wood, etc., kept at a safe distance. Metal smoke pipes should not run through a wooden floor or partition, and where a large metal stack is required to run through a wooden roof it should be protected by a collar about twelve inches larger than the pipe, placed so as to allow a continuous passage of air along the outside of the stack. Brick chimneys must be carefully built, on solid foundations, and no joist or other woodwork should rest on or against the chimney.

Heating apparatus of any large size should either rest on a fireproof floor, or if it rests on a wood floor should be separated therefrom by a layer of hollow tile with open air spaces to keep down the temperature. Steam and hot air pipes also should be protected by collars or double pipes where they run in or through wood partitions.

Next to preventing fires entirely the best thing to do is to put them out when they are small. For this purpose chemical fire extinguishers or pails of water or sand are commonly provided. *The best extinguisher is the automatic sprinkler.*

Taking up the subject of construction, let us consider the famous Edison fire. This large plant consisted partly of reinforced concrete and partly of brick and wood buildings. The concrete buildings came through the fire with comparatively small damage to themselves, but their contents were entirely destroyed because Mr. Edison had overlooked three fundamental features of fire protection, namely, *automatic sprinklers* to protect the very inflammable contents; *fireproof windows,* to keep fire out of the concrete buildings; and *fire walls,* to prevent the rapid spread of the flames. In contrast to the Edison plant, a cotton warehouse at Salem went unscathed through the fierce fire which destroyed the greater part of that city, because its outside windows were protected with both wired glass and automatic shutters.

Other elements of fireresisting design are enclosure of all stairway and elevator shafts and separation of hazardous departments by means of fire walls. These protective measures can be applied in a mill constructed building as well as in one of fireproof construction. In a mill constructed building heavy wooden beams about four feet apart are

*Building Inspector, State Industrial Commission, Madison, Wis.

used to carry the floor in place of the usual two inch joists close together. These large beams burn much less rapidly than the thin joists.

In spite of all these precautions, fires will sometimes occur and we must therefore have proper exits. This does not always mean fire escapes because stairways enclosed in brick or tile walls are better exits than any fire escape. When an outside escape is necessary, it should be built substantially, so that it can be used in case of need. Windows past which the fire escape runs should be protected with wired glass because in many actual fires the flames bursting out through the windows have rendered the fire escape useless.

Another form of exit is a door through a fire wall into another building or division. Such openings must, of course, be protected by standard fire doors. Above all, exits should never be locked or obstructed while the building is in use. The death of a dozen persons in the recent Brooklyn fire was directly due to the fact that one of the exit doors was locked.

Probably the best safeguard of all is to have a good fire drill. Fire drills are for two purposes; first, to get the people out of the building, and second, to put out the fire. The first purpose is more important in high buildings occupied by a large number of employes, especially if they are women. A fire alarm signal is provided and when the alarm sounds the employes form in line and march out under the directions of the floor captains. When this drill is practiced conscientiously the effect is that in an actual fire the employees will follow their leader, even through smoke, to safety.

For putting out the fire a private fire department is formed consisting of employes chosen and drilled for this purpose. The International Harvester company has a splendid private brigade in each of its plants. These brigades are provided with hose carts and are regularly drilled in their duties. The Harvester company has achieved remarkable results through this system. In a smaller plant a very efficient drill can be carried on by simply practicing picked employes in handling the fire extinguishers or water pails. An extinguisher in the hands of a cool-headed man who knows how to operate it is worth more than a dozen extinguishers hanging on the wall.

In connection with the fire drill, regular inspections are made to detect any conditions which might cause fire, such as accumulations of rubbish, defective heating apparatus, oily waste, etc. These inspections also detect any obstruction of exits and also insure that the sprinkler valves will be open and the entire fire protection equipment generally will be in good order.

Fire prevention and protection along these lines is recognized as a necessary activity in every large factory to prevent the crippling of the plant through fire and to protect the employes.—*Fire Protection.*

Cabel & Peek of Savannah, Ga., announce that on and after July 1st, 1917, their business will be incorporated and will be conducted under the corporate name of Cabell & Peek, Incorporated, with a fully paid in capital of $75,000. The business will be conducted under the same management as heretofore and will have increased capital and stronger connections.

The Need of Proper Ventilation.

Every day the necessity for proper ventilation is becoming more and more evident. Statistics show that a worker's output varies at least 20 per cent, according to the ventilation. Ventilation has a cash value, particularly as labor becomes scarcer and the demand for production greater.

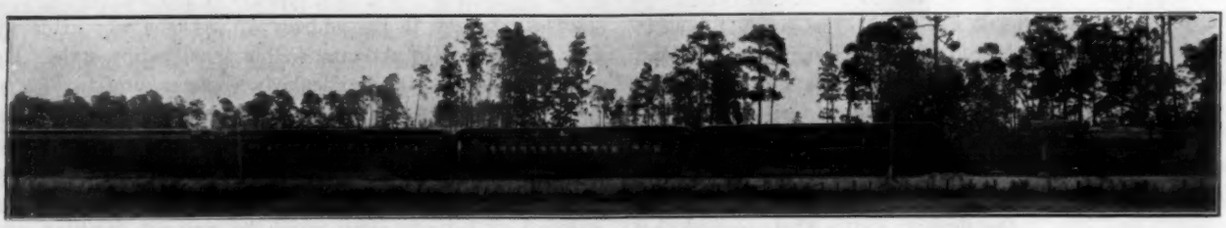
Few industries have such difficult ventilation problems as the different varieties of textile mills with their vapor, chemical gases, lint, humidity, heat and large numbers of operatives. The size of the average plant makes the operating expense of a mechanical exhaust system a heavy item. The most practical solution of this problem seems to be the installation of "semi-mechanical" ventilators.

The Swartwout rotary ball-bearing ventilator is said to fill the requirements perfectly. It has a large circular hood with a large vane on top which keeps the "mouth" of

the ventilator always away from the wind. The passing breeze is continually forming a vacuum at this point, which draws out the used air from below. The air rising through a large unobstructed passage flows out and is carried away by the wind. With the Swartwout no backdraft or loss of velocity is possible. This ventilator appeals very strongly to mill owners as, owing to its low cost of installation, enough can be installed to insure perfect ventilation, while there is no further operating expense.

The illustration shows a battery of 14 degrees Swartwouts on a Trenton (N. J.) plant, where they are giving perfect satisfaction. The louvers are shown in a closed position. The Ohio Blower Company, 5151 Perkins Avenue, Cleveland, Ohio, makers of the Swartwout Ventilator, will be glad to send full particulars in regard to this ventilation.

Under date of June 1st an announcement has been made of the organization of the Electric Supply & Equipment Company of Charlotte, N. C. This company, who are distributors of electrical merchandise, maintain a warehouse at 220 West Third St., where they will handle and maintain a full line of motors, lamps, wiring, etc. The officers of this new company are W. H. Martin, Jr., president, formerly of the Southern Power Co.; Thos. G. Lane, formerly with the Mill Power Supply Co., treasurer; and Rogers W. Davis, Southern Representative of the Saco-Lowell Shops, secretary.



A PART OF THE COTTON MANUFACTURERS' SPECIAL ON THE A., B. & A. RAILWAY.

Georgia Cotton Manufacturers Convene

The meeting was a great success and everyone had a fine time. This was the general consensus of opinion expressed by those present. Another opinion freely expressed by many was, "Let's do this every year, instead of having a one day business meeting in some city."

They were all there, from the cotton manufacturers to their "kiddies," and it was a moot question which had the better time. From gray haired men and ladies to toddling youngsters they dashed and splashed around in the surf, became sun-burned and hungry, and then after one of Host MacKenzie's satisfying meals, they loafed on the cool veranda until time to retire to a night of unbroken slumber.

They forgot the price of cotton; they forgot the worries of the mill; they forgot everything but the present opportunity to relax. This was after the first day. All the business of the convention was crowded into the first day, the final session lasting until nearly midnight.

Scattering members and guests began to arrive in Brunswick on Thursday morning and the 2:30 P. M. boat to St. Simons carried quite a little party. However the majority of the party arrived in Brunswick on Friday morning on the

Cotton Manufacturers' Special,

which was a special pullman train operated over the Atlanta, Birmingham and Atlantic Railway and in the personal charge of General Passenger Agent W. W. Croxton of that company.

Arriving in Brunswick, a special fish breakfast was served at the Oglethorpe Hotel, after which the party embarked for St. Simons.

The new St. Simons Hotel, which had been reserved as the headquarters for the association and its guests, presented a very lively appearance with its long verandas sheltering a moving mass of humanity, while the individuals of which this mass was composed enjoyed the cool breezes and renewed old acquaintances.

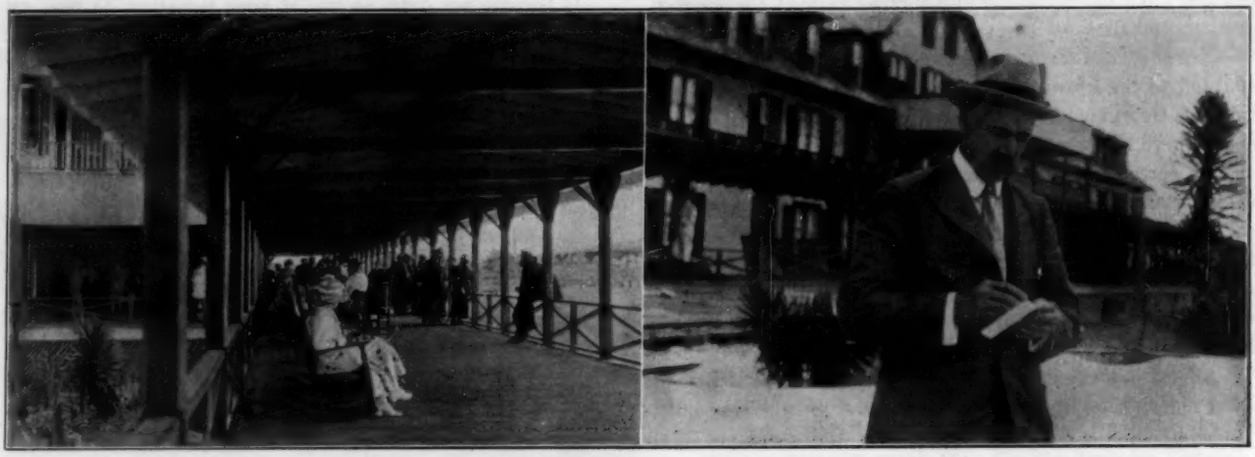
After luncheon the

First Session

was called to order by President W. J. Vereen of Moultrie, who called upon D. A. Jewell of Chickamauga to pronounce the invocation.

The reading of the roll call and the minutes of the last meeting were dispensed with and President Vereen introduced the first speaker by saying:

"When the Committee having in charge the making of the program came to the point of selecting some one to extend a word of welcome, all minds immediately turned to a Georgian, whom all Georgians love, a self-made man—a man who started in life some years ago as a telegraph operator in a small South Georgia town, and who, by sheer force of ability, forged his way to the front. He not only has succeeded in a financial way, but he has given much of his time and his means to the benefit and for the welfare of mankind. We are all proud of the gentleman from the county of Glynn, who will extend to us today a welcome in behalf of this section of Georgia. I take great pleasure in presenting to you Hon. L. R. Akin, of the county of Glynn."



ON THE LEFT, THE VERANDA AT THE NEW ST. SIMONS HOTEL. AT THE RIGHT, JAMES L. CARBERY, IN A CHARACTERISTIC ATTITUDE.

Senator Akin said in part:

It affords me great pleasure to have been chosen from the county of Glynn to welcome you in our midst. I do not know how I would undertake to thank your President for the compliment paid me, but it has been my pleasure for a great number of years to know him and his father,

and you know our friends can see a great many things in us that others cannot see; so, Mr. Vereen, your President, having known me from his boyhood up to now, has taken the occasion to pay me that compliment.

This island is sacred soil to every true Georgian. It was here that Oglethorpe planted his colony, and within a stone's throw of this hotel is the battlefield—Bloody Marsh—where was fought the decisive battle that decreed that the coast of Georgia should be an English possession instead of a domain of Spain. Had it not been for St. Simons Island the greatness of our state could never have been attained, and we trust that this meeting of yours will mark an epoch in the future progress of Georgia as great as the battle of Bloody Marsh.

There has been a great deal said in Georgia about planting more food stuff and less cotton, but the prosperity of our state is more dependent upon cotton than any other product of our agricultural endeavors. Georgia is the field wherein is grown a large percentage of this product that the world must have. Within its boundaries there is a sufficient water power, that has never been harnessed, to turn the wheels of every cotton factory of the world. Our transportation facilities are as good as that of any other section. We have ports sufficient to accommodate the navies of the world. With these advantages it has always occurred to me that it was a crying shame that we should confer upon sections other than our own the greatest profit realized from this product—the manufacture of the finished product and its sale.

There is no section in the whole cotton belt better adapted to the growing of cotton than is the southern section of Georgia. Within a radius of fifty miles of the spot where we are now gathered there are at least two million acres of land that have comparatively recently been denuded of their forest and are now available for agricultural purposes. At least seventy-five per cent of this acreage is wonderfully adapted to the raising of cotton, both long and short staple. It can be bought by the farmer at a cheap price, and the cost of rendering it tillable is most reasonable.

Almost coincidental with the founding of the settlement of Frederica on this island, sea island cotton was cultivated by the early settlers. It was the principal crop raised here. This cultivation of cotton continued with great profit up to the beginning of the civil war, but since that time on account of the scarcity of labor, very little cotton has been cultivated here until quite recently, when scientific research has led the experts to believe that an invasion of the boll weevil of cotton fields located upon our islands will never occur, and now cotton planters are purchasing farms upon the island of St. Simons, and we hope that within a few years our land will be returned to its large former production.

I am one of those who believe that the future prosperity of our state is largely dependent upon its becoming a manufacturing as well as an agricultural section. Already your progress in the manufacturing field has been great indeed, and we believe that the time is near at hand when the Georgia loom will be sufficient to take care of our entire crop. It is our prayer that this day will be hastened and it is but an accomplishment of tomorrow, and I trust and hope that much will be done by you at this meeting to assure its early fruition.

The response to the address of welcome was made by Lee M. Jordan, of Atlanta, in his usual happy style. He admitted that it was particularly embarrassing to him to address an association of cotton mnufacturers in mass, because, as he was only a cotton manufacturer by marriage, he was always afraid he would get the technical terms mixed. However, being a good lawyer, he carefully avoided all subjects with which he was not familiar, and successfully supported the affirmation that right now cotton manufacturers are pretty tired.

After appointing the usual committees on resolutions and nominations, President Vereen introduced as the next speaker

Senator Thomas W. Hardwick

who spoke to the subject, "Recent Federal Legislation Respecting Child Labor," and said in part:

I wrote your President when I agreed to make this engagement that I would discuss recent federal legislation with respect to child labor. I wanted to do that because I had a message for you that I did not want you to misunderstand, and somehow or other, I felt you were entitled to have it from me.

A little less than two years ago, the culmination of a series of attempts to enact in the Congress of the United States legislation respecting the employment of child labor in the various industries of the United States occurred at Washington.

It became my duty, as one of your Senators, to pass on that question and to take position in regard to it. I did so after careful and conscientious thought about it, after matured and deliberate consideration of the question, and it would be neither just to me, nor fair to yourselves for me not to tell you that in considering that question I did not put first and foremost every interest and every desire—I put first and foremost the interest and rights not only of the people of Georgia, but every Southern commonwealth in this American Union; I put first and foremost the American child.

There are a great many problems of government bound up in that question that are much more important than the mere detail of labor regulation. I don't want to be misunderstood on that question, and I am sure you don't. I believe in just and humane regulation of child labor and all sorts of other labor for that matter, and I know you do.

I questioned the wisdom, the justice, the humanity of saying to a child of a certain age that it is better for you to be a loafer and a bum than it is to do a little honest labor.

There were but two practical differences between the Federal law enacted in 1916 and the Georgia law that stands on our books. The Georgia law provides that a child of fourteen and down to twelve was not to be permitted to work in her mills and factories, unless one of two things were true: unless the child was the sole dependence of a widowed mother; unless the child was an orphan, who would become a charge upon public charity unless it did. I said to my colleagues, is it better to say to a boy between twelve and fourteen, you can't work to help support your widowed mother, and let them both go to the poor house? The state which denies work to the healthy and strong boys of those ages, does not propose to take care of either one of them. Is it better to say to the strong boy of that type that produced Andrew Jackson,

you shall not labor up to the time you are fourteen years old, even if as a result you must be a charge on public charity and go to the poor house? I didn't think so in Washington, and I don't think so here. A little work is infinitely better for a child of this class than walking around the streets smoking cigarettes and learning slang, I know it, and there is not enough power in union labor in this country to make me see it otherwise.

I am not antagonistic to union labor when they behave themselves and want to do right; then I am with them, but I am not with them if they want to do what I think is wrong.

This law had in it the very gravest questions of politics, of principle, and I want to explain very briefly what the results of this situation is likely to be, and before doing that—I want to discuss this movement of getting this thing suspended during the war.

Now, this bill as finally passed, and they did pass it, provides: "That no producer, manufacturer, or dealer shall ship or deliver for shipment in interstate or foreign commerce any article or commodity the product of any mine or quarry, situated in the United States, in which within thirty days prior to the removal of such product therefrom children under the age of 16 years have been employed or permitted to work, or any article or commodity the product of any mill, cannery, workshop, factory or manufacturing establishment, situated in the United States, in which within thirty days prior to the removal of such product therefrom children under the age of fourteen years have been employed or permitted to work, or children between the ages of 14 years and 16 years have been employed or permitted to work more than eight hours in any day, or more than six days in any week, or after the hour of seven o'clock P. M., or before the hour of six o'clock A. M."

THE KIDDIES ENJOYED THE SAND.

This bill passed. It passed because it had behind it the most tremendous political forces that ever were arrayed either in support of such a proposition or in opposition to it. First, they had the union labor leaders from everywhere, north, south, east and west, pleading as long as pleading could do any good, and then threatening senators and representatives. You gentlemen know their power; you know how public men hesitate to challenge it; you know why it is dangerous to do so.

Added to that there were a lot of good sentimentalists, whole-souled, warm-hearted people.

Not only did we have the union labor and these sentimentalists, but we also had piled up on top of that, strong political motives—the strongest you ever saw.

This legislation is wrong because it challenges the very fundamental principles upon which this government rests; this legislation is wrong because it ignores and denies the very fundaments of American government; this legislation is wrong because it is of a character with all that legislation which seeks to make of this country a great consolidated republic with no local self government, with no dual system of government.

LEFT TO RIGHT: SENATOR THOMAS W. HARDWICK, AND PRESIDENT W. J. VEREEN.

We have a Federal Congress sitting at Washington now, sitting all the time, or nearly all the time, and working day and night, and it is almost impossible for the Federal Congress to transact business that is strictly Federal—there is such a volume of Federal business; so many questions that ought to be attended to that are truly national questions and that belong to the general government, it takes all of our time to transact that business. Now, if you add to that all of the affairs of forty-eight states and over forty-eight thousand cities and forty-eight thousand counties, where on earth will we find time to transact all that business? And then it is most important that a legislator have information—ought to know what to do, ought to know what the probable effect of those laws will be. What will I know about enacting local laws for the people of North Dakota, California or Indiana? And what do the senators of those states know about our local conditions in Georgia? It is impossible for them to have time or knowledge to transact those things.

I said I was going to give you some authority on the subject. First, I want to read you what a distinguished Republican, who is a great lawyer, said upon this subject in a great book this distinguished statesman has written:

"Bills have been urged upon Congress to forbid interstate commerce in goods made by child labor. Such proposed legislation has failed, chiefly because it was thought beyond the Federal power. The distinction between the power exercised in enacting the pure-food bill and that which would have been necessary in the case of the child-labor bill is that Congress in the former is only preventing interstate commerce from being a vehicle for conveyance of something which would be injurious to people at its destination, and it might properly decline to permit the use of interstate commerce for that detrimental result. In the latter case Congress would be using its regulative power of interstate commerce not to effect any result

of interstate commerce. Articles made by child labor are presumably as good and useful as articles made by adults. The proposed law is to be enforced to discourage the making of articles by child labor in the state from which the articles are shipped. In other words, it seeks indirectly and by duress to compel the state to pass a certain kind of legislation that is completely within their discretion to enact or not. Child labor in the state of shipment has no legitimate or germane relation to the interstate commerce of which the goods thus made are to form a part, to its character or to its effect. Such an attempt of Congress to use its power of regulating such commerce to suppress the use of child labor in the state of shipment would be a clear usurpation of that state's rights." (From Former President Taft's book entitled "Popular Government," pp. 142, 143.)

Judge Cooley said in his book that this proposition to attempt to indirectly control child labor through United States commerce law was unconstitutional. Without repeating it in detail, I will refer to what some distinguished authorities, such as Woodrow Wilson, said about it before he got into politics. I think I will read you a little of that to show you how far he went. This was from Mr. Wilson while he was a professor:

"And now the question has come upon us anew. It is no longer sectional, but it is all the more subtle and intricate, all the less obvious and tangible in its elements, on that account. It involves, first or last, the whole economic movement of the age, and necessitates an analysis which has not yet even seriously been attempted. Which parts of the many-sided processes of the nation's economic development shall be left to the regulation of the states, which parts shall be given over to the regulation of the Federal Government? I do not propound this as a mere question of choice, a mere question of statesmanship, but also as a question, a very fundamental question, of constitutional law. What, reading our Constitution in its true spirit, neither sticking in its letter nor yet forcing it arbitrarily to mean what we wish it to mean, shall be the answer of our generation, pressed upon by gigantic economic problems, the solution of which may involve not only the prosperity but also the very integrity of the nation, to the old question of the distribution of powers between Congress and the states? For us, as for previous generations, it is a deeply critical question. The very stuff of all our political principles, of all of our political experience, is involved in it. In this all to indistinctly marked field of right choice our statesmanship shall achieve new triumphs or come to calamitous shipwreck.

"The old theory of the sovereignty of the states, which used so to engage our passions, has lost its vitality. The war between the states established at least this principle, that the Federal Government is, through its courts, the final judge of its own powers. Since that stern arbitrament it would be idle, in any practical argument, to ask by what law of abstract principle the Federal Government is bound and restrained.

"Its power is to regulate commerce between the states, and the attempts now made during every session of Congress to carry the implications of that power beyond the utmost boundaries of reasonable and honest inference show that the only limit likely to be observed by politicians are those set by the good sense and conservative temper of the country.

"The proposed Federal legislation with regard to the regulation of child labor affords a striking example. If the power to regulate commerce between the states can be stretched to include the regulation of labor in mills and factories, it can be made to embrace every particular of the industrial organization and action of the country. The only limitation Congress would observe, should the supreme court assent to such obviously absurd extravagances of interpretation, would be the limitation of opinion or circumstance."

He was right; that is exactly what is being done today; that is why I am opposing such of these things as are transforming the very form and constitution of our Government, taking away from us the very substance of English and American liberty.

Now, this bill passed. Why not? Both political parties for it; the President of one leading it, and the leaders of the others seconding it, with all running a foot race trying to get to the Bull Moose first. Can you wonder at the result?

I hope that you gentlemen will test this law squarely and to the very end. I believe, Mr. President, in obedience to law as long as it remains such, whether it is a conscription law, or a child labor law, or any other sort of law, state, national or municipal. So long as it remains on the books, every man who believes in liberty will yield to its mandate, but the right of a free born American citizen to ever challenge the policy involved in the enactment of such a statute, or to advocate repeal of such a law, or to test the constitutionality of such a statute, is as inherent as liberty itself; and whenever any one of those three rights are denied, then there will be no more liberty in America. Obedience to the law, yes, obey it. But, does that close every mouth to object to its enactment—advocate its repeal? I say no!

In my judgment the Supreme Court of the United States is bound to overthrow it. I will not undertake to go through the decisions now, but a careful study lasting through six years, convinces me, as a lawyer, that there is not the slightest chance that even this court, knowing as I do the mental attitude of its members will hold this law ever to be constitutional. I thought so when I voted against it, and I could not vote for it unless I failed to

LEFT TO RIGHT: JACK W. HORNER, ATLANTA, AND J. H. QUINLAN, MANAGER, CEDARTOWN COTTON AND EXPORT CO.

uphold the Constitution of the United States, as I was sworn to do.

Not one of you owe me the slightest obligation, either personally or politically on that account; I do not claim it, and would not have you so think. I would not have been fair to myself, to my own manhood and to the three million of Georgia people, if I had not taken the stand I did. I made the best fight I could. All I can say to you is, if you continue that up to the door of the Supreme Court, this statute will never be sustained.

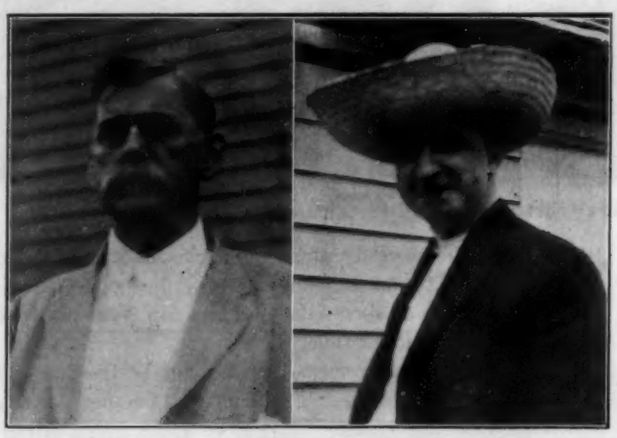
At the close of Senator Hardwick's address, which was warmly applauded, President Vereen requested Lee M. Jordan to present

Mrs. Nellie Peters Black

to the association as the next speaker. Mrs. Black, who is President of the Georgia Federation of Women's Clubs, selected as a subject, "How Club Women and Mill Men Can Coordinate Their Work for the Mill Village to Get the Best Results," saying in part:

In the old days we considered our women as a vine, a clinging vine, especially the Southern women—sometimes clinging to a very rotten post. That day has passed now. The Women's Club numbers about 250 clubs, and 25,000 membership, and we are divided into twelve districts. The work has gotten so large that each district now gives as large a meeting as the general meeting used to be five or six years ago. This Club movement, organized over the whole of the United States, non-political, non-sectional movement, is the best organized movement there is in the country, while in number in the last twenty-two years it has grown to the proportion of two and a half million women, who are working for the uplift of humanity.

I have been asked to say something about how we could coordinate the work of the Women's Club with the mill village, and when I consider that we have in Georgia one hundred and fifty thousand mill people, the question is, what are you going to do with them; what have you done for them? If you go around them in their mill village in a stiff sort of way, you can do nothing with them; you have got to go to them as friend to friend, and once you make a friend of any of those people, you can mould them as a



LEFT TO RIGHT: D. A. JEWELL, THE NEW VICE PRESIDENT, AND J. A. MANDEVILLE, OF THE MANDEVILLE MILLS, CARROLLTON.

piece of clay. I speak from an experience of forty-eight years.

One of the very best ways I found to meet these people was through the little children. So, we went into these villages, among the poor people, and the very first people we went to for cooperation were the mill managements,

LEFT TO RIGHT: M. H. HENDEE, GEORGIA-CAROLINA POWER CO., AUGUSTA, AND L. H. BECK, GEN. SUPT. GEORGIA COTTON MILLS, GRIFFIN.

and they gave us the utmost cooperation. I have been boiling hot over things people in the North say about our mill children, about the treatment they receive here.

I had an experience the other day: I was down at one of our club district meetings in LaGrange, and I was sitting out in an old garden, started about seventy-five years ago by two old people, young people at the time, who loved flowers. Right up through an isle of trees was a wonderful mansion on the hill, a beautiful home, and as I sat there and looked up at that home, I thought to myself, isn't it a joy to see a man work hard and be able to have such a home as that when he does not forget the other fellow. And if you gentlemen have never done so, I would love for you to go to LaGrange and visit the mills under the management of Mr. Callaway and his associates and see what a modern mill village can be made to look like. I saw the beginning of that work. It was begun by Bishop Nelson twenty years ago in a small way and has gradually spread until now we have the Hillside Mill village with its inn for young women, its inn for unmarried men, with schools as fine as any you will find in the cities of Atlanta, Macon or Augusta, with teachers to raise those children to be the very best citizens of this country of ours. You can see it right there, and I assure you we honor any people who do such a work as that.

The day has come now when I think we can learn through others, and I assure you when the call from our Presi-

R. C. FREEMAN, OF WEST POINT AND LAGRANGE, THE NEWLY ELECTED PRESIDENT.

dent came to us for help, when he said we want the women to help us, I never had such a proud moment in my life, to think the women of Georgia had begun three years ago to discuss this matter of preparedness; that we wanted to raise in Georgia everything that Georgians could eat and everything that could be fed to animals. We have been sending out of the state of Georgia 186 million dollars a year, and every cent of it could be kept right in our state for the benefit of our schools and people.

I went into one of the big stores of Atlanta on March 2nd a year ago, and there was a line of tables covered with vegetables, and I said, "Where did these things come from?" The sweet potatoes came from Indiana, cabbages from Ohio, and the Irish potatoes from Canada; there was something from California, Florida, of course, had a great quantity of things. I said "In the name of goodness is there nothing here from Georgia?" Yes, there was a bunch of turnip greens raised in Fitzgerald!

Left to Right: Our Boat, the Sea Gate; Fishing from the Ocean Pier.

I assure you I have been this year from the borders of Florida to the mountains of North Georgia; I have been down to Savannah, and I have been over on the other side of Georgia, and I have never seen such gardens in my life as we have got right now. We are going to try to get a list of every single can that every woman in Georgia puts up this year, and send that list to the President of the United States to let him see that we are awake to the patriotic duty of feeding ourselves and the people outside of our borders.

When we look at those people that belong to your mills we beg that you will adopt planting, adopt it now; and that you will have these demonstrating agents go among the people—your mill people—and teach them this lesson of home economy. They have started it in Carolina and now they have demonstrating agents who go to every mill village and teach those people how to can their vegetables. I assure you that you could not make a better investment for your people than to employ for one year one of those women.

The session then adjourned.

The Second Session.

Because of the strong sea breeze, it was decided to hold the evening session in the hotel parlor, instead of the pavilion where the afternoon meeting was held.

It was nearly 9 o'clock when President Vereen called the session to order. The annual report of Secretary and Treasurer P. E. Glenn was read and accepted, as was the report of the auditing committee.

These were followed by an address on Group Insurance by W. B. Thomas, special agent of the Aetna Life Insurance Co. President Vereen then introduced

James L. Carbery.

a Special Agent of the U. S. Department of Agriculture, who spoke on "Mill Village Demonstration Work," saying in part:

The Mill Village Demonstration Work of the U. S. Department of Agriculture cooperating with Clemson College in South Carolina represents one of the last and greatest gifts to the South of that truly great man, Dr. Seaman A. Knapp, father of the Farm Demonstration Work of which it constitutes an important part.

Dr. Knapp was a man of wonderfully clear vision and to whom the human side appealed strongly. He, during 1911, foresaw among the cotton mill people of the South (constituting, in South Carolina about one-eighth of the population), the necessity of an industrial work that would take them back to the soil with renewed but more intelligent development of their latent talents for economic food production at a critical time.

This great plan was to be worked out in the form of elementary agricultural education, offered the people in a practical yet enticing form. It was to bring added opportunities into their lives, visions of a brighter and happier future with increased and increasing opportunities for adult and child, through the direct medium of the small garden, production, conservation and utilization of t' various products. It was to take care of the imminent needs of these people, yet, I am not sure that he saw preceding his death a few months later, any satisfactory material developments, nor that he was aware that his great work would irresistibly lead the operative into higher planes of mental, physical, spiritual and moral development through their own efforts put forth unconsciously.

In a general sense the operative needs a tonic just like other human beings, but perhaps for a lesser number of ailments. He needs education not only literally, but to lessen his desire to move aimlessly from place to place with no material benefit. He needs education along many economic lines, the development of individuality and a feeling of self-ownership for the little home in which he resides. He needs practical training in thrift, production, and curtailment of waste so intensified now by reason of the war. He is now doing what he should have done each year previous to reduce the high cost of living.

It is my purpose to show that any influence mutually contributing to the wholesome development and maintenance of the best community spirit is desirable. Any influence which brings employer and employee into closer relationship and better understanding of each other is beneficial. The operative who conciously or otherwise can be led into an atmosphere of greater contentment and thrift, who transforms his house into a home with better environment accomplished by personal effort becomes more efficient in the mill and community and is contributing to a most contageous example of real American thrift.

We have now reached a time when competition between manufacturers in the matter of securing and holding the best class of help is a potent factor. Mills are resorting to various means to achieve this end, and for which some are paying too dearly. This is the place where organization and cooperation play an important part, the object

being to render the kind of cooperation and service for which there is the greatest need, and for which purpose the objects of the mill village work are arranged as follows:

1. Home gardens. a. Summer. b. Winter.
2. Home canning. 3. Home beautification.
4. Horticulture. a. Fruit. b. Shrubbery. c. Flowers. Planting and propagation.
5. Landscape work.
6. Home sanitation. a. Flies (Breeding places). b. Mosquitoes (Breeding places).
8. Poultry husbandry.
9. Club work. A. Tomatoes. a. Juniors (8 to 18 years of age). b. Seniors (over 18 years of age). B. Irish Potatoes. C. Corn. D. Pig.
10. Plant Diseases and Insect Pests. Allied Interests. 1. Illustrated Lectures. 2. Agricultural Schools. 3. Field Meetings. 4. Night Meetings.

Mill Village Fairs.

Services of Experts at All Times.

Irish potato clubs at all the mills with memberships running well into the thousands. At the mills mentioned there are upon the basis named 970 distinct sources of food supply, while 125 small children are separately engaged in growing Kentucky Wonder and lima beans on strings at ends and sides of their respective homes. Added to this there are about 2 acres planted in demonstration gardens cared for by the local demonstrator. These mills have not only attained the wonderful record of over 100 per cent home gardens, but the officials have donated every foot of land they owned, and rented much additional land which is being judiciously used by their operatives for gardens, about 50 acres in all.

They have gone even further by advancing money to any good families to purchase cows, permitting them to return it in small payments each week without interest. Under this plan some 50 good cows have been secured. This fall these mills will buy velvet beans, have them crushed, and sell to the operatives at cost for cow feed in lieu of a silo to be erected next year by the Victoria Mills

OGLETHORPE'S OLD FORT AT FREDERICA; ON THE LEFT AS SEEN FROM THE BOAT LANDING; ON THE RIGHT, A CLOSER VIEW.

The Demonstration Work permits its Agents to recite any well known facts concerning things of interest which have happened, but they are not permitted to predict the future as too many things may occur to cause changes that might be disappointing, thus the wisdom of this policy.

With these rules in mind it is my aim to give you gentlemen some "boiled down facts" taken from some of the actual results already accomplished at Arcade, Victoria and Harris Mills, at Rock Hill, S. C., where the work passed from experiment into permanent form in 1914. These three mills together have only about 140 homes in all, with one local demonstrator, a man paid by the mills, who looks after details and carries out the instructions of the Special Agent in charge of mill village work. The officials of these mills openly confess they feel the money spent in mill village demonstration work yields the largest profits of any. It was at these mills in 1913 that 31 children were enrolled in the Tomato Club after much difficulty and the allaying of some suspicion. Today we have 320 in these clubs alone, composed of both children and adults of both sexes, each member handling 24 plants, while the total enrollment among the 25 mills engaged in the work is about 1,485 in the Tomato Clubs alone.

This season we have tomato, bean, cabbage, sweet and

which will be filled by the company and silage sold likewise at cost. This will reduce the feed of the cows 60 per cent. The mills generally buy seeds, garden tools, fertilizers, fencing, in fact anything needed by the people and let them have them at cost.

Under the supervision of the Special Agent of the work, the mills have constructed a large community cannery attached to the boilers of the mill where the large amount of produce will be taken care of gratis, the people taught to do the actual work under the leadership of one qualified person. A greenhouse 18 x 75 feet is also being constructed for wintering the many fine specimens of pot plants grown by the people, and in this, some space will be given to propagating roses, shrubbery, etc., for distribution over the villages.

The annual mill village fair held at the Arcade-Victoria Mills cooperatively attracts thousands of people and presents magnificent displays of home grown and canned fruits and vegetables, fresh vegetables, art needle work, industrial art, etc.

Here are to be seen model day and night schools, community houses, an auditorium, in fact about all to be desired to create contentment. The church and Sunday school has grown rapidly and vice has practically passed

into history. Here everyone from the respective presidents and superintendents of the mills, down through a long line to the most humble operative, cooperation and loyalty are the watchwords and the moral standing of these communities is beyond reproach.

Following another principle of the demonstration work these mills do very little giving except in the form of well placed opportunities strewn along the pathways of the people—they must work for everything.

Thousands of tomato and cabbage plants, etc., are annually grown and distributed to the people and clubs. Every mill having the work donates $12.00 annually as prize money for the children of the Tomato Clubs. This amount is always divided into sums of $3.00, $2.00 and $1.00 for boys and girls and supplemented by state prizes subscribed by public spirited individuals, no prize being greater than $5.00, to prevent commercializing the issue. All prize money is given in the form of credit bank books to encourage saving, and from this source many of the children now have nice little bank accounts. Many have also attained inspiration to attend the graded and high schools, and some are in college; the work has awakened inspiration.

A further conservative statistical record of results for the year 1916 are as follows:

To date about 4,000 peach trees and grape vines have been sold the operatives, paid for by them, and planted around the mill homes averaging 3 trees and 3 vines to each house.

In spite of the intense drought followed by floods, during the past summer 5 mills at Rock Hill, in 316 club gardens, 24 plants to a garden, produced 15,459 pounds of tomatoes. One of these gardens at one picking produced 1,570 pounds of fruit at a time when none could be bought in Rock Hill.

One boy of 8 in 1914 raised 238 86/100 pounds of tomatoes on his 24 plants in the club garden and won a Clemson scholarship.

General results conservatively estimated and from records are as follows:

Increase in	
Home sanitation	60%
Village sanitation	70%
Health standards	75%
Home gardens and flower yards	85%
Methods and conservation of soil fertility	80%
Home grown vegetables	75%
Canning at home	60%
Day school attendance	40%
Night school attendance	50%
Church and Sunday school attendance	35%
Social life features	50%
Junior savings accounts	75%
Home beautification	85%
Irish potato raising	40%
Sweet potato raising	50%
Pork production	15%
Dairy cows and production	10%

This brings us to the happy conclusion that the Mill Village Demonstration Work is a basic work of indisputable practical value, upon which any well balanced form of community development may find a very firm foundation supporting not, only the best and most efficient labor procurable, but a means of still further raising the standards all along even to the point of better statesmanship through the medium of well directed effort, opportunity and cooperation.

During the course of his talk Mr. Carbery passed around a number of interesting photographs.

Much interest was shown by the manufacturers present and on motion by Mr. Callaway, steps are to be taken by the association officers to further investigate this work, with the possibility of establishing similar work among the Georgia mills.

LEFT TO RIGHT: THE ROAD FROM WESLEY'S CHURCH; SECRETARY GLENN RESTING AT THE FOOT OF A GIANT LIVE OAK.

An extended discussion was had on the work of the traffic bureau and a number of changes suggested. These were referred to the traffic committee for further action.

Other committee reports followed and it was nearly midnight when the meeting adjourned with the election of the following officers:

President, R. Q. Freeman, West Point.

Vice-President, D. A. Jewell, Chickamauga.

Secretary and Treasurer, P. E. Glenn, Atlanta.

The committee appointments of the new president will be announced later.

The Trip to Frederica.

After a dip in the surf and a hearty breakfast on Saturday morning, the larger part of those in attendance made their way to the ocean pier and boarded the steamer Sea Gate, which had been chartered for the day. A delightful sail followed with a stop at Frederica, where the

entire party visited the ruin of the old fort built many years ago by Oglethorpe, when he thought St. Simons Island was the main land of Georgia. This visit was made doubly interesting by an impromptu talk given by Mrs. Black, who was entirely familiar with the historical associations.

Proceeding down a wonderful road, surrounded by giant live oaks all but hidden under their burden of Spanish moss, a visit was made to "Wesley's oak" and the church founded by him.

SNAPPED ON THE BEACH.

Returning to the boat, the trip to Brunswick was resumed and as the Sea Gate wended her devious way through the channels that sub-divide the "marshes of Glynn," Captain Lang played at host and served iced watermelon to the entire party.

It was a happy and a hungry crowd that

Landed At Brunswick

a little after one o'clock. Here they were met by Brunswick's leading citizens with innumerable automobiles and promptly driven to the "Home of the Elks," where an excellent buffet luncheon was promptly served by a score of handsome girls. During the luncheon, an informal reception was tendered by the Brunswick Board of Trade, led by the two Smiths (President and Secretary) and ably seconded by numerous other members.

After the cigars were lighted, the automobiles were again called into service and a tour was made of the city and its industries, stops being made at several large plants, where those interested were escorted through the works.

At 4:30 P. M. the whistle of the Sea Gate announced departure and the trip to Jekyl Island began.

Arriving at Jekyl, the party landed and spent an interesting half hour looking over the club grounds, after which a quick trip was made to St. Simons and dinner.

By ten o'clock Saturday night the big hotel dining room had been cleared of tables and an informal dance was given, the Brunswick Cotillion Club being the guests of the occasion.

On the last day of the outing the party divided into two groups; one of these groups departing from the Ocean Pier early in the day on the steamer Atlantic bound for Fernandina, Florida, and return (an all day sail); the other group preferring to remain quietly at the hotel to rest and enjoy the surf.

At 7:30 Sunday night the special train departed for Atlanta, bearing the larger number of the party to their respective homes. It was at this time that the remark noted early in this story was most prevalent—"Let's do this every year!"

Most men are apt to imagine that they have outlived their usefulness when they are no longer capable of giving advice.

One Hundred Per Cent For Liberty.

Every officer and employee of the Economy Fuse and Manufacturing Company, Chicago, has done his or her bit for liberty. Every name on the payroll stands for some service or personal sacrifice for the cause. Every member of the organization, numbering over two hundred, has purchased one or more Liberty Bonds, from the officers and directors to the newest office boy. Some of the men and women have gone to the front in the army, the navy, the marines and in ambulance units. The stay-at-homes have responded to the government's appeal by subscribing a total of $80,000 worth of Liberty Bonds.

The company evolved a most liberal selling plan, based on weekly payments proportioned to the wage or salary of the individual. In some cases the payments are as low as twenty-five cents a week. In addition, the company will pay the last $5 of the purchase price as a bonus to the employee who remains in the company's employment the required length of time. It is provided that where an employee leaves the employ of the company before his subscription is entirely paid for, the money paid in will be refunded together with six per cent interest.

A. L. Eustice, president of the Economy Fuse and Manufacturing Company, expressed himself as being highly gratified with the success of the plan as it worked out in his plant. He said that, inasmuch as large quantities of the company's product are purchased by the government, he felt it to be a patriotic duty to have the company finance this method of giving all the employees an opportunity to invest in the Liberty Loan.

"Prest-O-Lite Process Apparatus for Oxy-Acetylene Welding and Cutting" is the title of an eight page catalogue recently published by the Prest-O-Lite Company, Inc., Indianapolis, Ind. It contains a chapter on selecting equipment to suit requirements, together with illustrated descriptions of Prest-O-Lite welding equipment and cutting apparatus with information as to the values of each type. A list of extra parts is also included, as well as some accessories such as welder's goggles. Copy of this catalogue may be secured on application.

Carolina Cotton Men in Convention.

The North Carolina Cotton Manufacturers' Association and the South Carolina Cotton Manufacturers' Association held their annual meetings in Asheville, N. C., June 7th, 8th and 9th, which also happened to be coincident with the annual meeting of the Georgia Cotton Manufacturers' Association which was held at St. Simons Island, Ga.

The Carolina associations held joint and separate sessions, the separate sessions being executive.

The North Carolina Association made headquarters at Grove Park Inn, the meeting being called to order by President W. C. Ruffin about 10 o'clock Friday morning. Addresses were made by Thomas W. Chambliss, Editor of the Asheville Times; Senator A. M. Dixon of Gastonia; Lieutenant Governor O. Max Gardner of Shelby, N. C., and J. M. Davis, of Newberry, S. C., Vice President of the Southern Textile Association.

Mr. Davis spoke upon the operation of the Keating Bill and outlined the Newberry plan for meeting its requirements. Following this address there was an animated open discussion of the operation of the new Child Labor Law and its effects on various mills belonging to the organization.

John L. Patterson of Roanoke Rapids was elected President for the ensuing year.

The South Carolina Association made their headquarters at the Battery Park Hotel, the first session being called to order by Capt. Ellison A. Smyth, the president, about 9 P. M., when matters for executive discussion were taken up.

The second session of this association was held at 10 o'clock on Friday morning when President Franklin W. Hobbs of the Arlington Mills made an able address, in which he discussed the growth of cotton manufacturing, particularly in the South. He urged upon his hearers the danger of unfair foreign competition, and the necessity of cooperation and the coordination of the textile interests of the whole country. Mr. Hobbs devoted some time to the subject of chemistry and dyestuffs and also discussed accidents in manufacturing.

Speaking of the National Council, Mr. Hobbs said in part:

"We are all deeply interested in the action taken at the recent meetings of the National Association of Cotton Manufacturers and the American Cotton Manufacturers' Association, by which the National Council of American Cotton Manufacturers was strengthened and given fuller powers, and steps were taken to place it in a financial position that will make it a truly representative and active national body, representing all the cotton manufacturers of the country in matters of national importance. As the father of the idea, I naturally feel the pride of a parent in his child, and you will pardon the personal allusion to the fact that just five years ago on my recommendation the plan for a National Council was adopted by both associations.

"Such was the beginning of the council. It has had many meetings and it has accomplished a fair measure of good. If it did nothing else, I believe it helped to bring the cotton manufacturers of the North and South into closer relations and brought about a better understanding between them. Like all such plans the actual working out has fallen short of the ideals of its founders. It has been felt of late, and properly so, that much more could be accomplished if this central body had greater strength, and the whole subject of the amalgamation of the two associations has been considered. It has been decided, and, I believe wisely decided, to continue the two separate organizations as before, but to strengthen the council by giving it strong financial assistance, thus making it a real power in the industry.

"I believe the local and state associations have a most important and useful service to perform and should be encouraged and fostered in the good work they are doing. Let them continue along their own lines and in addition support the National Council, and with all the organizations working for the best interests of the industry, great good will follow. Cooperation is the word today. There is no difference in our interests. Every branch of the industry is interested in every other branch. If any business condition or legislation adversely affects one mill it must eventually affect all mills. There is no longer a North and a South so far as our industry is concerned. Let us all work together for the common interest and use every endeavor to make our industry in every sense of the word a national industry."

George D. Brown, Jr., superintendent of mill schools in South Carolina, spoke on education, and the Rev. D. E. Camak, President of the Textile Institute at Spartanburg, S. C., made a short talk on industrial education.

Following the annual address by President Smyth came the election of officers. Capt. Smyth, who has served for fourteen years as President of the South Carolina Cotton Manufacturers' Association, tendered his resignation and was presented with a handsome rug as a token of the esteem and appreciation of his colleagues. V. M. Montgomery, of Spartanburg, S. C., President and Treasurer of the Pacolet Mfg. Co., was elected president. Leroy Springs, President of the Lancaster (S. C.) Cotton Mills, was elected vice-president; Jno W. Arrington, Jr., Treas. of the Union Bleaching and Finishing Co., of Greenville, S. C., was elected treasurer; and F. B. Downing of Greenville, S. C. secretary.

The joint session of the two associations was held at the Battery Park Hotel on Friday afternoon about 3:30 o'clock. The meeting was called to order by V. M. Montgomery, who surrendered the gavel to retiring President W. C. Ruffin of the North Carolina Association who presided at the joint session.

An address was made at the joint meeting by Miss Grace Abbott of the Children's Bureau of the United States Department of Labor. She addressed the joint meeting on the subject of the new Federal Child Labor Law, the address being followed by a general discussion. Several social events were enjoyed by the members of the Cotton Manufacturers' Association present, and despite the very rainy weather which persisted throughout the meetings, the conventions were considered to be very successful.

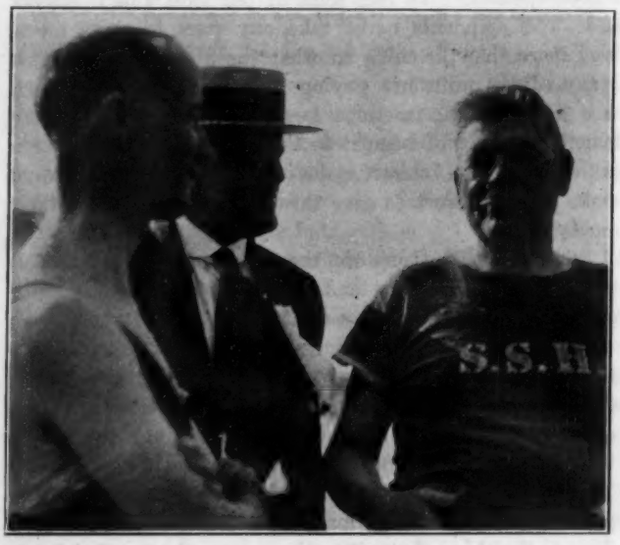
The directors of The American Shuttle Co., 53 State Street, Boston, Mass., have declared a dividend of 5 per cent to the stockholders as of record June 20, 1917, with the recommendation that each shareholder pay the same over at once to The American Red Cross War Fund.

Southern Textile Association.

The eleventh annual meeting of the Southern Textile Association which was held at the Seashore Hotel at Wrightsville Beach, N. C., on the 22nd and 23rd of June had in attendance a larger number of superintendents and overseers than has ever been the case in the past, with the one exception of the meeting held coincident with the Southern Textile Exposition at Greenville in the fall of 1915.

Something like 400 members and guests of the association were located at the Seashore Hotel, at its sister hotel, the Oceanic, and some were even scattered among the smaller cottages on the beach, having been unable to secure reservations at either of the hotels in question.

Members began to arrive at Wrightsville on the afternoon of Thursday, and by Friday morning the larger part of those in attendance had already arrived. Owing to an unfortunate combination of circumstances, business prevented President Frank E. Heymer of the Alexander City (Ala.) Cotton Mills attending this convention and presiding. Therefore, when the



THEY FEED 'EM WELL IN BURLINGTON. J. R. PURSER OF CHARLOTTE ACTING AS JUDGE.

First Session

was opened at 10:40 a. m. on Friday the chair was occupied by Vice President J. M. Davis of Newberry S. C.

Chairman Davis called upon A. H. Cottingham, who offered the invocation, after the convention had been called to order. Chairman Davis then called upon Senator Arthur Dixon of Gastonia to present the first speaker, Lieutenant Governor O. Max Gardner of Shelby, N. C. Mr. Dixon gave Lieutenant Governor Gardner unstinted praise as a friend of the cotton mill men and also as a big hearted generous and broad minded man.

Mr. Gardner welcomed the delegates on behalf of the state of North Carolina, and paid to the textile men the tribute of having changed the old outworn ante-bellum idea in the South that soiled clothes and knotty hands and labor were disgraceful. After discussing the situation briefly, Mr. Gardner drifted into a patriotic address which not only brought forth frequent cheers from his hearers, but at times had them on their feet.

At the close of Mr. Gardner's address he was unanimously made an honorary member of the Southern Textile Association by a rising vote of its membership.

The next address on the program was by J. G. McCormick of the Chamber of Commerce of Wilmington, N. C., who welcomed the delegates to the city and assured the members present that Mayor Moore would turn over the keys of the city of Wilmington for the asking and indicated his belief that there were no keys in Wrightsville Beach as long as the Textile Association were visitors.

PRESIDENT FRANK E. HEYMER.

He outlined the many advantages of Wilmington as a seaport city, and closed by offering the market service and other features of the Chamber of Commerce to the membership of the association during their visit.

The response to the address of welcome was made by James A. Greer of Greenville, S. C.

Telegrams were read from President Frank E. Heymer of Alexander City, Ala., regretting his inability to be able to preside at the meeting, and also from the North Carolina Bankers' Association tendering greetings. Then came the annual address of the president, which was not read at the meeting, but which was ordered printed in the proceedings.

President Heymer in this address commented upon the war situation and upon the necessity of cooperation and support of the administration in its present situation by the textile industry as a whole.

Referring to the many changes that had been made in the living conditions of the textile operatives during recent years, President Heymer continued in part:

"Especially does this require better homes for them, and I sincerely trust that the presidents of our mills will not over-look the fact that a good, comfortable, convenient

A FEW OF THE BATHERS.

house will be attractive to the better, and more intelligent employee, and keep him satisfied, and contented. The old slogan, 'One room to each hand', is fast disappearing. Let your employees have plenty of room so they can arrange one for a living room, and not use bed rooms for such purposes. The health of your people will improve wonderfully, and morals correspondingly, which is bound to have effect on your product.

"Surround the village homes with attractiveness; light the streets at night; provide good water and sanitary conditions; provide some place for recreation, and a safe place to work; and then you soon will find very little tendency among your operatives to leave for other and more attractive places."

The first practical paper on the Friday morning program was entitled: "Is It Practicable To Pay Loom Fixers By the Piece," and was presented by Gordon A. Johnstone of the Fulton Bag & Cotton Mills, Atlanta, Ga. This paper which is reproduced practically entire elsewhere in this issue, attracted a great deal of attention among the membership and aroused much discussion and favorable comment.

Because of the time utilized in the discussion of Mr. Johnstone's paper, it was decided to postpone the discussion of the Keating Owen Bill until the afternoon session. However, a very practical paper was presented by

F. Gordon Cobb,

superintendent of the F. W. Poe Manufacturing Co., of Greenville, S. C., in which he outlined a plan for better technical papers at the meetings of the Southern Textile Association and said in part:

"If I understand the object of this association it is first of all intended to make us more efficient overseers and superintendents.

"We do not seem to get the exchange of ideas at these meetings we should. I want to say that the plan or idea I have to present is not worked out in detail. But I hope it will give some of you food for thought so that we may get together and perfect a system whereby we can get away from the monotony of merely having one man's ideas expressed in a paper which is read at the meetings. There should be some plan that would give us the benefit of the knowledge of *all* the members, rather than hearing from only a few.

"My idea is that we as overseers, master mechanics, and superintendents are seeking more light on the practical manufacturing problems. There are so many good men that we do not hear from at the meetings because many of them wait to be asked to present a paper and the most of us do not like the idea of getting up before an audience.

"Now an expert weaver, spinner, carder, cloth room man or master mechanic does not necessarily have to be a good speaker. In fact some of our most able overseers and superintendents never take any part in these meetings more than listening to what the others have to say. Many of the mills are paying the expenses of their men who attend these meetings because they expect them to learn something of benefit to their jobs. If the mills are taking that much interest it does seem to me that we should make special effort to give them value received for their money.

"I know that there are thousands of good ideas that come to these meetings and go away with the originator of them; unknown to the rest of us.

"Now be honest with yourself when I ask this question. Is it not a fact that many of you know better ways of doing certain things which you have not mentioned at these meetings? Well now that is the thing I am after. We want those good ideas of yours. That is what the Southern Textile Association is for. That is what will make it a success. That is what will make us better men on our jobs. That is the thing that will make our employers glad to see us come to these meetings.

"The unprecendented progress the southern mills have made in the last 20 years, I am confident has been due more to our learning from each other than from any other one thing. We have long ago found out that a man does not lose anything by letting other men know what he is doing. Our association should be a clearing house for ideas to improve production and save waste. We must make these meetings so important that our employers will reprimand us for *not* attending.

"The carders who attend these meetings want to know the best way to set cards in order to get the strongest and cleanest sliver from the grade of cotton they are using. There are hundreds of old cards running in the South today on which the chains are worn out and as the carder can not get new chains, for various reasons not necessary to explain; the flats begin to rub the stripping plates, that pushes the stripping plates into the cylinders and faces the clothing; with the result that the front stands are

THE WATCHERS ON THE BEACH.

backed off to about a 20 gauge. That part of the card is doing more harm than good also it is causing part of the strip to be pulled back into the cylinder.

"I know one superintendent who was making out an order for chains and sprockets to equip 110 cards when he chanced to hear of a man who knew how to fix the old ones. He adopted the idea and saved his mill over $900. *That* is the kind of dope we want to bring out in these meetings; we want to make them beneficial to our employers and make ourselves better overseers.

"Just to make a start I will say that the man is in this room who can show any of you how to make old cards with worn out chains do good work and he will gladly give you the information for the asking.

"We, as carders, also want to know whether one process of drawing will give any better breaking strength than two processes, or whether a draft of 6 and a doubling of 5 is better on drawing than a draft of 5 1-2 and a doubling of 6. Whether it is best to run the compressed cotton alone or mix part of a big bale with it.

"I recently read a paper before the Technical Textile Conference at the Bureau of Standards in Washington, and under the title of Humidity in Cotton Mills, I told them that on one occasion there was more humidity or grains of vapor to a cubic foot of air in a spinning room with all the windows closed than there was outside during a hard rain. They smiled—because it did not sound reasonable—I finally convinced them it was a fact.

"Any spinner in this hall knows that if his work would run *all* the time like it does on some days he could fill up every spare beam in the mill with yarn.

"The Southern Textile Association was organized to get to the bottom of just such problems and we can do it if we get to work in the right way.

"During a meeting of the South Carolina Manufacturers Association in Asheville recently a few superintendents were sitting out on the porch of the Battery Park Hotel and naturally talking shop. One man told of a new idea he was putting into effect in his mill which would be worth several thousand dollars to the mills represented here if they all knew it. I can see that man now from where I stand. That idea is here in this room and we want to find a way to exchange these good ideas that have been through the experimental stage and have been proven practicable.

"We as weavers want to know how to make our work run better, what to do to lower our seconds, how to get better fixing, etc.

"Mr. Cloth Room Overseer when your grader cuts out a bad place, if he were to cut one inch closer to the bad place and save one inch of cloth for the mill would that be a corresponding saving in cotton for the mill, or not? If you don't know, then at these meetings is the place to find out because there is some man here who does know.

"I only wish I had the time to go into detail with these illustrations through every department of our work, but I am afraid I am already taking more time than I should, therefore I am going to offer as a suggestion that the president appoint a superintendent, who has been overseer of carding as chairman of a committee on carding and that all carders be automaticlly made members of that committee. Then have the chairman of that committee get his carders classified according to coarse goods, fine goods and combed work, and appoint a chairman of each group of carders. Have each carder write out a list of questions which will, if answered correctly, help him out of some trouble he is having in his room, such as tangled work, nitty sliver, having to put in too much twist, inability to make intermediates furnish enough roving for the speeders, can't keep card hands, or in other words let him ask for information on the things that give him the most trouble. Then have him write down any original idea he has put into effect, such as a better way to work scavenger and roving waste or any improvement on any machine. Turn these papers over to his chairman. Then let the chairman of carding with his sub-chairmen sift these papers down by eliminating duplicate questions, etc., and compile *one* report to be read at our next meeting. This, it seems to me, will get the carding information into concrete form and still have the best ideas, short cuts, etc., of all the carders in our association. At the same time it would absolutely assure us of having a good paper on every department of our work.

"Of course you understand that this same arrangement is intended to apply to every department of the mill. Spinning, weaving, cloth room, power department, etc., I merely took carding because it is the first process.

"The law of supply and demand applies to mill work as well as all other lines of work. If we grasp the opportunity that the Southern Textile Association offers, we will certainly become more efficient in our work. If we run our jobs better than other mill men do, our employers will make more money and the operatives will make more money. If southern mills are run more efficiently than mills of other sections—capital will be attracted to southern mills, then more mills will be built and those mills will need more overseers and superintendents.

"We have the logical location for the mills. We have the highest class labor in the world. We have for the financial heads of our mills men who have our interest at

THE PICTURES OF MORE THAN 125 OF THE CONVENTION DELEGATES FOLLOW. LOOK FOR YOUR FRIENDS.

heart; men who have come up from the ranks; men who have a personal interest in their operatives; men who are big hearted and stand for the highest ideals of gentlemen; men who have proven themselves *Master Builders.*

"We have a great opportunity—so lets get together through this association and prove to the textile industry that we have the most efficient overseers and superintendents in the world."

This paper was considered of so much interest that some of the members of the association made a motion, which was unanimously adopted, that the secretary of the association be ordered to have one thousand copies of the paper printed and distributed among the mill officials of the southern cotton mills. The morning session then adjourned.

The Second Session

was called to order at 2:30 P. M. in executive session. At the suggestion of David Clark, newspaper men were barred from the session and textile journal representatives were requested to make no notes of the discussion, only the official stenographer of the association being present and making the official record.

However, one of the plans discussed, which is known as the "Proximity System" and which was devised by Superintendent James A. Bangle of the Proximity Manufacturing Co., Greensboro, N. C., aroused so much interest among the members present that we are presenting an outline of this system as it was presented to the meeting by Mr. Bangle. However, none of the comments made thereon are printed.

The Proximity System.

"The system which I am trying out at the Proximity Mill, which I will explain to you, works satisfactorily so far.

"This system will call for no additional machinery, and will work as well in a coarse yarn mill as in a fine yarn mill; will work as well in weaving as in spinning; will work in any department if there are as many as three hands between 14 and 16 working in that department.

"This eight-hour help must be checked in and out of the mill by a reliable man, who is working directly under the superintendent; this man has the authority to go down in the mill and take a child off work and bring him or her out of the mill should they fail to come at the proper time, and after working 8 hours; this man will check each one between 14 and 16 every time he goes to work and every time he leaves work.

"An illustration, at 3:10 p. m., a spinner who went to work at 6:10 fails to show up. This man must go in the mill and bring her out; she must not be allowed to stay in there even though she is not at work. In other words, keep a record that is absolutely accurate and one that will show at a glance just the time each one went to work and each one quit work.

"This plan consists in working help between 14 and 16 in groups of three. One of the three will be known as spare hand for the other two. The others will be known as No. 1 and No. 2. Spare hand and No. 2 will come to work at 6:10 a. m. Spare hand will run No. 1's work till 9 a. m. No. 1 comes to work at 9 a. m. Spare hand will go home at 9 a. m. and come back to work after dinner, 12:50, and will work spare till 3:10 (two hours and 20 minutes spare). At 3:10 spare hand takes No. 2 hand's work and runs it till stopping time, 6 p. m. No. 2 hand goes home at 3:10, working 8 hours.

"Spare hand goes to work at 6:10 and runs No. 1 hand's work till 9. Spare hand goes home at 9 and comes back after dinner, 12:50, works till 6, making 8 hours.

"No. 1 hand comes to work at 9 a. m., works till 6 p. m., making 8 hours.

"With this system no one comes to work at other than the regular starting time except one in every three. This one comes in at 9 a. m.

"Taking spinning as an illustration, figure pay as follows: 17 cents per side for ten hours equals 1.7 cent per side per hour. 8 hours would be 13.6 cents. This would give a spinner working 8 hours a little over 13½ cents per side.

Spare hand works from

6:10 to 9 = 2 hrs. and 50 min.
12:50 to 6 = 5 hrs. and 10 min.

Total .....7 hrs. and 60 min.

No. 1 hand works from

9:00 to 11:50 = 2 hrs. and 50 min.
12:50 to 6:00 = 5 hrs. and 10 min.

Total .....7 hrs. and 60 min.

No. 2 hand works from

6:10 to 11:50 = 5 hrs. and 40 min.
12:50 to 3:10 = 2 hrs. and 20 min.

Total .....7 hrs. and 60 min.

"By runing the mill from 6:10 to 12:05 on Saturday, the 8 hour workers will make six hours or ¾ of a day on Saturday, or 46 hours per week and still have a half holiday on Saturday. Thus the 8 hour workers will make 5¾ days for the week, only lacking 2 hours making 6 full days.

"The working hours of the mill will be as follows: Start the mill at 6:10 in the morning. Stop for noon or dinner at 11:50. Give one hour for dinner. Start up after dinner at 12:50. Stop in evening at 6 o'clock. This gives running time as follows: 5 hours and 50 minutes in

morning; 6 hours and 10 minutes in evening. An actual running time of 10 hours and 50 minutes each day for five days, which amounts to 54 hours and 10 minutes. Then as the running time for Saturday: Start in the morning at 6:10, same as forepart of the week, and stop at 12:05, making 5 hours and 50 minutes.

First five days .....54 hours and 10 min.
Saturday ..... 5 hours and 50 min.

Total time for week.....59 hours and 60 min. or 60 hours

About 9 percent of our help are between 14 and 16 years of age. In spinning, spooling and warping we have 262 hands, 45 of these are between 14 and 16, or 17 per cent. Of 62 doffers, 27 are between 14 and 16, or 43 per cent. Hands employed, about 1,000. Numbers of yarn spun 9's to 14's."

Following the discussion on the Keating Owen Bill, F. Gordon Cobb of Greenville, S. C., presented an informal report on the progress of the Southern Textile Exposition, Inc., after which the second session adjourned.

The balance of the afternoon was spent in the surf, by the majority of the delegates present, the others at the water's edge watching the fun

Complimentary Concert.

At 8:30 o'clock Friday evening a complimentary concert was tendered to the Southern Textile Association at the Harbor Island Auditorium by the Cement Products Company of Wilmington, N. C. J. F. Harris, the well known general manager of this company, was in charge and had made an announcement at the morning session of the convention that special cars would be in waiting at the hotel at 8:15 p. m. to carry the delegates to the auditorium. Promptly at 8:30 p. m. the concert, which consisted of the Wilmington Symphony Glee Singers, opened a very entertaining program. The soloists of the occasion were: Miss Anna Graham Harris, contralto; Miss Catherine Williams, soprano; Mr. John F. Harris, Jr., basso; and Mr. John F. Kneisel, violinist.

The Harbor Island Auditorium, where this concert was held, is an auditorium recently constructed by the Tidewater Power Company for the use of conventions and associations visiting Wrightsville Beach. It is a beautiful, clean, roomy, well lighted building, with a seating capacity of between two and three thousand. The accoustic properties of this auditorium are remarkable, and tended to emphasiz the the splendid tonal qualities of the soloists' voices.

A particularly happy feature of this complimentary concert and the participants therein, was the fact that the son and daughter of Mr. Harris were two of the soloists present and that Mr. Harris personally, through his love for music, has done a great deal to promote the Wilmington Symphony Glee Singers. The program rendered was as follows:

PART I.

Comrades in Arms ---------- *Adams*
Glee Singers.
Violin Solo ---------- *Selected*
John F. Kneisel
The Chimes ---------- *Williams*
Messrs. Crockett, Lockfaw, Tremain and Harris.
a—Goodnight, Little Girl Goodnight ---------- *Macy*
b—Boot and Saddle ---------- *Rogers*
J. F. Harris, Jr.
a—Goodbye ---------- *Tosti*
b—The Danza ---------- *Chadwick*
Miss Anna Graham Harris
Dixie ---------- *Ennett*
Glee Singers.

PART II.

a—Men of Harleck ---------- *Tilleard*
b—Timbuctoo ---------- *Geibel*
Glee Singers.
a—Jean ---------- *Burleigh*
b—The Fairy Pipers ---------- *Brewer*
Miss Catherine Williams
a—The Ocean Never Sleeps ---------- *Solman*
b—Had a Horse ---------- *Korbay*
J. F. Harris, Jr.
a—An Irish Love Song ---------- *Lang*
b—To the Unknown ---------- *Shaw*
c—Ma Curly Headed Baby ---------- *Clutsan*
d—Flower Rain ---------- *Schneider*
Miss Anna Graham Harris
Doan Ye Cry Ma Honey ---------- *Scott*
Star Spangled Banner.
Glee Singers.

Especial interest centered around the solo work of Miss Harris, who was well known by reputation to many of the delegates present through the medium of a concert tour recently made during which she appeared before audiences in a number of the larger southern cities. The life and expression with which she imbued the numbers she interpreted proved a source of joy to her listeners and called forth enthusiastic applause.

After thoroughly enjoying the various numbers, many of which were so continuously applauded as to require an encore, the delegates made their way to the car line where a special train carried them to Lumina, where dancing was enjoyed until a late hour. On this occasion the entire dancing floor of the Lumina was reserved for the delegates and guests of the Southern Textile Association.

For the benefit of those who were not present, it might be well to indicate here that the Lumina is an immense dancing pavilion located at the end of the line of the Tidewater Power Company and also connected with the hotels by a well lighted board walk. Surrounding the dancing floor of the Lumina was a liberal seating capacity for those who wished to look on, while adjoining the dancing floor were extended balconies overlooking the surf, which were also plentifully supplied with seats. This immense building, open to the ocean breezes, supplied with its splendid orchestra and its convenient refreshment stands proved to be a unique feature among the various attractions at the beach.

Also, in this connection, it might be well to mention the exceedingly convenient interurban electric service offered by

the electric trains of the Tidewater Power Co., which operate to and from Wilmington at convenient intervals during the day and until late into the night.

Promptly at 9:15 a. m. the

Saturday Morning Session

was called to order by Vice President J. M. Davis, who introduced as the first speaker General Secretary H. E. Spessard of the Schoolfield Y. M. C. A. at Danville, Va. The subject given Mr. Spessard was "The Relation of the Superintendent and the Overseers As Seen By An Outsider," but the paper as presented was a splendid discussion on the human side of industry. This paper is reproduced practically entire elsewhere in this issue.

The next address on the program was by

John A. McFall.

superintendent of the Dilling Cotton Mills at Kings Mountain, N. C., who spoke on "The Man of the Hour." He was frequently applauded by his hearers, and said in part:

In speaking to you upon the subject, "The Man of the Hour," I shall endeavor to call to your attention those acquirements and innate principles which not only makes man an efficient factor in the world's industry, but which broaden his influence and makes him a greater benefactor to humanity.

By reason of the fact that the south today is pulling unto herself the finer qualities of the manufactured product, there must be a closer co-operative system; a more intelligent labor, and a more scientific management. We see then, in the background, that the man who would meet the requirements of the present day must know the art of manufacturing, not only by experience, but by scientific investigation; must have a good portion of natural ability, and must possess a clean character.

No grander word than science ever intered the category of human interpretation. What the brain of the future has in store I shall not attempt to say, but I do know that science has lighted the torch of intellectual progress and that mind and not brute strength is made supreme.

When this great industry, of which you are representatives, was in its infancy and comparatively only a few years since, its leading men still clung to the archaic idea that old age with its patriarchal beard was fit only to steer this great ship through the troublous waves of competition and that beardless youth, was thought insufficient for the task. But modern requirements have quickened competition to the extent that going at things in a half handed way is unsatisfactory to say the least of it and such competition must be met, not only with a full knowledge of complete operation, but also a knowledge of the quality, and the nature of the materials used.

A man should have an adaptable nature, leavened by foresight, and softened by sympathy; plenty of patience

PRESIDENT ELECT J. M. DAVIS.

and of a co-operative turn; be a close observer and attentive; considerate but firm in judgment; even tempered and calm in emergency; unassuming and approachable; alert, energetic and never procrastinating; pleasant and courteous, giving kindness to whom kindness is due. He should be a teacher, and he who has not this ability is greatly handicapped in the instructing of those who are dependent upon his knowledge.

With all the above named qualities blended into a man's nature he may yet be a failure if he has not the ability of discernment and discretion.

The man of worth today is the man of character; he lies not, neither does he steal; he is loyal and looks upon strong drink as raging; he deals with his fellowman conscientiously and puts integrity above position; the appeals of the crook and the laughter of degrading society are to him as "Sounding brass and tinkling cymbals," his habits are clean and openly performed and he despises trickery; he is not prejudiced in his ways nor too stubborn to learn.

Therefore, gentlemen, I again call your attention to

science; natural ability, and character—this great trinity —which constitute the man of the hour.

The next address on the program was on the "Cause and Prevention of Uneven Yarn" by A. C. Atkinson of Clayton, N. C. This paper will be reproduced practically entire in a later issue.

A short memoriam by G. S. Escott, editor of the Mill News, Charlotte, N. C., was then read by his son, A.E. Escott to the memory of E. E. Bowen, organizer and past president of the association, and also an honorary member of the association who has passed away during the year.

Then came the report of the auditing committee and the report of the treasurer. These were followed by the election of officers, the following officers being elected for the ensuing year: President, J. M. Davis, Newberry, S. C.; vice president A. M. Dixon, Gastonia, N. C.; chairman of the board of governors, F. Gordon Cobb, Greenville, S. C.; secretary, A. B. Carter, Greenville, S. C., re-elected; treasurer, Marshall Dilling, Siluria, Ala., re-elected.

Several additional members of the board of governors were also elected, and it was voted that the next semi-annual meeting of the association should be held at Greenville, S. C.

Final adjournment was then taken.

The afternoon was devoted to sailing trips, fishing trips and a complimentary automobile trip around Wilmington and the county of which it is the county seat, this latter trip being given by the courtesy of the Cement Products Co., of Wilmington.

Many members remained over Sunday at Wrightsville Beach in order to enjoy the magnificent surf bathing there afforded, while other members, particularly those living at a considerable distance, felt obliged to catch the Saturday afternoon trains for home in order to be back on the job by Monday morning.

From the point of practical discussion of the papers presented and the serious intent of its membership to improve themselves and the conditions at their mills, this meeting was regarded by many to have been the best the association has ever held.

"Get ready for Greenville" is the slogan for the next six months.

The Shambow Shuttle Company of Woonsocket, R. I., on June 23rd advanced the wages of their shuttle makers and shuttle iron makers, totaling 150 employees, 10 per cent. This is the second advance of 10 per cent in seven months.

The Human Side of Industry.*

BY H. E. SPESSARD.†

In the earlier history of the cotton mill industry of the South many superintendents were imported. The most aggressive men have survived. Many of them have made great contributions to the South. In a general way their policy was one of high pressure by which means they hoped to arrive at a complementary result—namely, maximum production.

Rapidly and naturally in the evolution of textile progress these positions are now being filled by southern men of southern ideals who have learned to climb by long and tedious apprenticeship each higher round in the ladder of success. This change in the source of leadership, together with the steady rise of industrial standards has brought about a changed relationship, not only between superintendent and overseer, but also between overseer and his help. However, the same fundamental principles governing the relations of individuals have not changed. It is only the application of these principles that varies. And, in proportion to the readiness with which superintendents and overseers have learned to apply these principles in harmony with progressive ideals, have they acquired prestige among both operators and employees.

Permit me to bring to your attention four of these principles: 1. A common appreciation. 2 A common candor. 3. A common sense of human values. 4. Cooperation.

From statements caught on the wing many men prefer to work for *men* rather than for *wages*. And there are overseers who refuse to leave their superintendents, solely for personal esteem, when offered larger salaries.

A frind of mine who had been superintendent of a mill for a number of years was nearing a nervous collapse and was obliged to take a rest for a number of weeks. During his absence production fell off considerably. Several months previous to this incident he complained to me of the inefficient help he was obliged to use. "It is a most unappreciative crowd," he added, "and yet the directors expect me to get production."

In about a year my friend resigned. A new superintendent, employing practically the same force, in his sixth month reported the largest production in the history of the plant. Needless to say that he has a growing mill and a satisfied working force. The latter knew how to appreciate men, and they found pleasure in striving to follow his leading.

*Extracts from an address delivered before the Southern Textile Association.

†General Secretary Schoolfield Y. M. C. A., Danville, Va.

Not long ago a gentleman from North Carolina described to me a recent visit of his to a well known industry. One of the overseers was taking a vacation. An understudy was in charge of the department. With considerable emotion he referred to his foreman's absence. "When he left," remarked the understudy, "I went to all the boys and said, 'Mr. B——— is gone for a little trip; what say you to breaking the record?' They agreed. We all began to whistle and to speed up, and in less than a week the trick was played." On the return of the overseer he was given a glad welcome. The satisfaction of his men was no less than his own joy and surprise.

To know that special effort has received notice begets confidence in return. Likewise no act of special endeavor on the part of our fellow workmen deserves to pass our acknowledged appreciation. This habit of giving an outward expression to every fraternal impulse is a most effective antidote for the imperfections of men and hides a multitude of misunderstandings.

If an overseer sets a new pace—appreciate it. If you, as a big superintendent, see only your own little job, you are like the first baseman who became so desirous of grand stand notice that he forgot his team mate on third. If a superintendent sets a new standard the overseers should appreciate the opportunity and do the unusual.

No finer sense of the fitness of things can stir most men to their best endeavor than frequent expressions of proper appreciation. And although it may be suicidal to be constantly looking for a "thank you," nevertheless no supply kept on hand for frequent use ever becomes poisonous when administered in a friendly sort of way. It is said that a dog never forgets the gentle eye of the man who has befriended him and that he will always remember the stranger who gave him a bone. Whereas a cat ungratefully forgets every kindness. And men—comrades of men—are of infinitely finer feelings than the purest bred dogs.

When men fully appreciate each other there springs up between them a common candor. Wherever we fail to find this open frankness in textile work, overseers and operatives alike are a shifting crowd in constant dread of not being able to measure up to the rising standards of production or of being outclassed by ambitious men from the ranks. Where such conditions exist the superintendents are usually uncommunicative and uncomprising. It is no longer enough for a superintendent to know his job. In addition, he ought to be a sort of social engineer.

An acquaintance of mine once said to one of his overseers, "Why do you repeatedly take exception to what I say when you know I am perfectly honest in the matter?" His sense of common candor was so obtuse that even to his superior this overseer's reply was unduly frivolous and disappointing. No gearing up of machinery in his department can ever remedy this human failing.

Frequently in the past the superintendent has been a kind of textile dynamo generating a current of driving power into every department of his plant, and the efficiency of his overseers has been reckoned by the amount of cloth they could turn out with the smallest percentage of seconds and by their ability to gear up machinery and men. May I not suggest that the biggest output of the modern superintendent is not *cloth* but *men;* and that his strength is to be judged not by his *driving power* but by his *leadership.* Similarly am I missing the mark to infer that the efficiency of the modern overseer is measured not solely by yards of cloth nor pounds of cotton consumed, but by the conservation of life primarily and by the production of cloth secondarily and consequentially.

When men have this common appreciation of each other and exercise this common candor in their dealings with one another they acquire a higher sense of the human values of the men whom they lead—and let it be remembered that the world's really great men have been leaders and not drivers. Of these human values I shall mention but three.

The first is *bodily vigor.* As superintendents, do you have efficiency tests? In them do you consider and plan for the improvement of the bodily vigor of your overseers? Do you see to the distribution of health literature? Do you provide means for and encourage healthful recreation for them and yourself? If there is a social service organization in your village, do you cooperate with the leaders in making it a delight for your men to relieve the daily strain in organized wholesome play? Have you learned from your own experience that play rejuvenates the body, mind and spirit? Have you thought that men never get too old to play so long as they are not too old to be of service, and that men live well when they play well? Are you and your overseers comrades?

As overseers, are you using all the means at hand to become physically fit? By this I do not mean do you keep in good health. When young, most people are in good health. Indeed, considering how indiscreetly men treat their bodies, good health is a kind of providential interference. What I mean is do you have reserve vigor? Do you have "pep" and "punch" both at 6 A. M. and 5 P. M.? For it is a reserve force of this type that overcomes the depression of the ever present humidifier, and becomes a storage battery for the motors of ambition and initiative. Mathematically put efficiency varies directly as health and brain power and indirectly as the square of the length of men's belts.

The second of these values is *faith.* I do not refer to creeds. By faith I mean that quality in the overseer that says my position is not a job. I can do this work better than it has ever been done. I know I can work with my superintendent and that he in turn means to give me every consistent means of support that my capability merits. I believe in my men and the company that finds a market for the cloth my men make and that gives me an opportun-

ity to produce a flawless fabric or a perfect yarn with the physical, mental and social powers that I try to keep in daily repair.

By faith I mean not that electric power of the superindent that drives—that shocks and burns when the insulation of human patience and kindness wear off, that short circuits in profanity and blows out the fuses of self-respect and administrative poise; but rather that power of the sun in its splendor, brilliancy and warmth, which, after the showers of sanitation, living conditions and safety devices have conserved life, by his magic powers of personality, counsel and friendliness causes the seeds of courage and contentment to swell, to grow and to blossom into a maximum efficiency.

Let me illustrate. A friend of mine had charge of a bleachery. On one occasion some difficulties arose among his men. He called them together and explained that his men were accustomed to work for him for long periods of time, and that he rarely discharged a man. He counseled with them to do their best and forget. His words were effective. The dissensions ceased, and today he belongs to that small group of men in his industry of whom it has been said, "they live what they preach."

It happened on one occasion that slightly stained cloth had escaped his notice, had reached the market and was returned with serious complaints by a firm having great national prestige. When my friend's attention was called to the matter by the selling department, he asked that he might investigate. He did so, discovered the trouble and at once corrected it. However, much goods had gone out and he was in danger of losing his position. In perfect faith and candor he wrote a letter of explanation to his superintendent stating the circumstances truthfully and taking the fault upon himself, although in reality caused by an inefficient laborer and being of such a nature as to be very difficult to detect.

The superintendent read my friend's letter, and although the mistake entailed a serious loss to the company, he gave instructions to the purchasing department that he so admired the frankness of the man and the prompt and efficient way in which he handled the matter that the mistake should be passed up. He then acknowledged my friend's letter with a courteous reply of commendation and confidence in his integrity.

Such a common trust among superintendents and overseers must be approaching the ideal. It ought to become both natural and general. For it would have a most certain effect for good on both quality and production. Faith and stability are parallel forces the resultant of which is character. And character by the newer method may be spelled with six letters, "o-u-t-p-u-t."

The third and last of the human values I shall suggest is *self-improvement.* It has been said that you men "hold the keys of industrial progress." If this be true, you, with the men holding similar positions in other industries, control the destinies of 30,000,000 souls. I believe that employers for the most part are recognizing the human factor in labor. It is your high privilege jointly to relate yourselves to their progressive ideals and to convince your men of their sincerity, and likewise, to hear the cry of labor and to be the proxy for each.

Your open field for development is social. Not less of textile skill, but greater skill in humanics, is the need of the hour. Do you get together in technical classes, clubs and group discussions for mutual improvement? Do you develop understudies in your several departments? Can you take a vacation feeling that your understudy will carry on your work satisfactorily in your absence, or would you be jealous of him? Have you a scientific plan for promotion? Do you encourage each other to enter into the work of local organizations, such as educational leagues, health committees, churches, Y. M. and Y. W. C. A.'s? Where this intermingling is in vogue there is a growing textile solidarity.

Just as many firms have seen the need of providing training for its salesmen and managers, just so, and in a much broader sense, there is a need for a scientific system of training for our overseers and superintenednts and of men aspiring to these positions.

The textile industry is spending hundreds of thousands of dollars in various forms of social service. You men by your loyal support to or by your disinterestedness in this work determine to no small extent the measure of its worth in man power in industry and determine your own worth to the textile world in the future.

These social forces are no longer on trial. Wherever they have been based on the eternal principles of brotherhood they have made good their claims both for workers and employers. And the textile industry, together with mining, railroading, lumbering—yes, even farming, is calling for a united front from the ranks of superintendents and overseers against educational, social, and moral unfitness. The bugle call of today is "improve yourself"—i. e., make yourselves fit. And let every superintendent know that when he opens the way for scientific and moral instruction for his overseers and they in turn for their men, he is hastening the day of peace and good will in industry. Bodily vigor, faith and self-improvement, these are three human values in textile progression.

The fourth and last principle outlined is *cooperation.* In athletics we call it team work. Individualism is out-of-date. Recall how long ago it has been since a general of an army has become famous by any spectacular move in a military engagement. The officers in our battle lines today occupy first line trenches with privates. Even so superintendents will do well to yoke themselves up with overseers for all must be comrades. Without this comradeship success is limited.

Both nations and industries are headed for democracy

the price of which is sacrifice. Wherever either has risen in its integrity and has paid the price it has become great in prestige and in honor. Let us not view this growing tendency in the textile industry with alarm but rather give it wise direction. Committees for all kinds of purposes are composed of men of every station and department. What greater contribution could you men make to the accomplishment of this dominant world ideal than to sacrifice of your time, talents, and even of your money, as I know men to be doing? Put your manhood behind the forces and organizations that make for bodily vigor, stability, mutual confidence and enriched life. Cooperation is today the slogan of republics, empires and industry alike.

Paying Loom Fixers By the Piece.*

BY GORDON A. JOHNSTONE.†

The question of paying loom fixers by the piece is one that has not been very fully investigated in this section of the country; nor, in fact, is it in practice very largely anywhere in the mill centers that I know of. There are a few exceptional cases where loom fixers are paid in this way, and the results are most satisfactory.

To make any change in an organization there must be good reason for the change, otherwise one is very liable to do more damage than good.

Any method in vogue that does not pay for results is unfair, in the opinion of the writer; and, as results are the ultimate aim of every mill manager, superintendent and overseer, the question of organizing his forces to get the best results is of the greatest importance to him, and the one problem that occupies more of his attention than any other one thing that comes before him.

It is also extremely important that every man shall be given the squarest kind of deal, and that he shall have your utmost confidence and you shall have his in any enterprise that you may attempt to carry out. There is no man who has had anything to do with the manufacture of cotton goods but will readily realize that this statement is correct, that practically one-half the cost of manufacturing a yard of cotton goods is directly chargeable to the weaving department, as it costs as much in the weave room as it does in both spinning and carding; therefore, with such a burden on the weaving it is very important that a maximum production shall be secured in this department, so as to bring the total cost down. To get this maximum output from the weave room is the problem, and to solve the problem a working organization must be perfected that has to do not only with the superintendent and overseer but also reaches down to the fixer and weaver, with a foundation of confidence established for fair dealing.

When we have the proper organization—beginning with our fixers, in fact through the entire organization to the head of the manufacturing department, where there is a thorough understanding and a unity of purpose—there is no question as to what the results will be. How can we keep our loom fixers interested in their work if all loom fixers are paid the same rate of wages? Is it fair that the man who is running a section and getting 85 per cent production should receive as much reward as the man who is running a section and getting 95 per cent production on the same class of goods—the same style of looms and all other conditions being equal? There is not a mill man in the hearing of my voice but knows that these conditions exist, and that they exist in almost every mill in the country. It may not be that the percentage is quite so wide as from 80 to 95, but there is anywhere a variation of from 5 to 10 per cent between a good fixer and a poor one. There is not only a difference in production, but there is also a difference in the quality of the goods. There is a difference in the supply bill. There is a difference in the interest of the weavers on the section, for the man who gets the greatest production usually has the smallest repair and supply bill and the best contented weavers on his job. Therefore, he is entitled to greater compensation than the man who has a large supply bill, a large repair bill and medium production—with dissatisfied weavers usually following in the wake of these conditions.

There are reasons which will be advanced why loom fixers should not be paid by the piece, namely, that there are conditions over which the loom fixer has no control. as he is not responsible for the yarn that he receives; he is not responsible for the way warps are slashed; he is not responsible when yarn is not ready and that he has looms waiting. He is not responsible for any of these conditions, and many other conditions that could be enumerated; nor is he responsible for having to wait for supplies and repairs. All of these items would enter into the question of

*Extracts from an address before the Southern Textile Association.

†Agent, Fulton Bag and Cotton Mills, Atlanta.

his production and his pay, and this is the very reason—and one of the strongest reasons—why he should be paid by the piece, so when these conditions do exist he can register a "kick" that can be heard around the plant and that will bring results, whereas they are now usually allowed to go by, the plant suffering as a result.

Do you think for a moment that a fixer would sit passively by and wait for warps, or wait for them to be drawn in, or wait for supplies or repairs, and accept poorly prepared work, if his wages depended upon it? At the present time he is more or less inclined to say nothing about it, rather than to stir up anything that might reflect upon his overseer, or bring about a condition that would not be pleasant and possibly result in his dismissal.

Under the piece rate system, the fixer, in my opinion, should be paid a minimum wage, that would insure him at least as much as he would get under ordinary conditions for loom fixing. This minimum wage would be paid when any condition prevailed over which he had no control, such as waiting for warps, waiting for supplies, or waiting for repairs. The piece rate system would be based so that his earning capacity would be much larger than it would be under any day system that might be in operation. In this way the fixer would become practically the overseer of the number of looms that he was running, seeing that the warps were right, registering a protest if they were not, seeing that the warps were supplied to him on time, seeing that the yarn that came to him was right, and in fact doing the things that we are now attempting to do through our system of organization with the second hand, the overseer and the superintendent.

We are not organized down to a fine enough point to get the results that we are entitled to. It would be much easier for a section man or a fixer to look after ninety looms and see that the conditions outlined are being given the proper attention than it would for a second hand to look after a thousand looms with all the complicated conditions that come up, or than it would be for an overseer to look after a couple of thousand looms. Now, to get the fixer to do this extra work and to show this extra interest is the reason they should be paid by the piece, and a rate fixed so that they would be rewarded for actual results that they would be able to obtain from the number of looms over which they have charge. It is purely a matter of organization, and the purpose of this organization is to get results, and to get the results the men must be paid adequately, and be paid fairly for the results they do get. There is no other way that it can be done, that I know of, because you cannot keep up interest among men when they are not rewarded for the work that they accomplish. It is absolutely an impossibility to do it. You may get results by other methods, but they are not lasting and the spirit is lacking, and they are not a real benefit unless consistently carried out day by day, and to consistently carry them out they must be on a basis that is equitable to the men performing the actual labor.

To my mind, there is not a more important class of men in a cotton mill than the loom fixers. On them depends the character of the goods that it turned out for our customers, and on our customers depends our success or our failure. On our loom fixers falls the task of using up and taking care of the mistakes made in other parts of the mill, all of which are too numerous to mention and all of which mill managers know too well. The mistakes of the card, the spinning, the spooling, the warping and the sizing rooms are an inheritance of the weave room. The weaving room suffers doubly when bad yarn is turned over to them to put into cloth. The mistakes could be overcome to a very large degree, if our loom fixers felt it was to their interest to register just complaints—which should be done in the spirit of good will and with only the idea of helpfulness to the department where the errors are made. Nothing is more stimulating than just and kindly criticism. It stimulates us to greater activity and concentration on the work in hand.

Now, I am not talking about the "Knocker." He has no place this side of the "Happy Hunting Grounds." But in my humble opinion, criticism stimulates, enervates, irritates, as in medicine, when a counter irritant is usually a remedy. Remember, *your* friends tell *you* your faults. Your enemies tell them to *others*.

If our fixers were paid by the piece and the weavers on their section put under their control, and the overseers not allowed to change them at will on to other sections where the fixer's job was run down and where he was endeavoring to pull up the production, the results

would be that the fixer would see that he had a good set of weavers working for him and that he afforded them every facility for getting as full production as is consistent with good work, for the reason that his earning capacity would be largely governed by the class of weavers that he had, and we all know that the longer a weaver is on a set of looms the more efficient he becomes and the greater the output. We keep a very complete record of the output of the sections of our weaving work, also the output of each individual weaver, and a loom fixer is never changed, nor is a weaver ever changed on a set of looms when it does not show a decided falling off in output either on the section or the set of looms affected.

It would also greatly facilitate the work of the overseer, inasmuch as the fixer would be on the lookout among his friends who are weavers, to secure for his section the best weavers to be obtained, and he would also have a personal interest in keeping them satisfied and contented. We all know that the great burden today inflicted upon overseers and mill men generally is not so much the technical part of cotton manufacturing as it is the question of keeping an adequate force of contented workers. In my opinion it would be a great leavening force, or stabilizing force, in the stabilizing of the weave room, and instead of our having so many changes of weavers or fixers we would get down to the place where changes would be comparatively few, and changes in the cotton mill can only be stopped, or reduced, by the man who has any authority whatsoever over the operator being intensely interested in his work and in maintaining the organization.

In co-operation and unity there is strength, and responsibility steadies a man more than any other one thing. The entire responsibility of running a section put upon the section man would steady him a great deal more than anything that I know of, and would give him that interest in excelling that nothing else can do. It would also open up a new avenue to him in that he would be directly responsible for the managing of his section, and it would train him for advancement and teach him to come in contact with the human element of industry as nothing else can.

Our organizations are made up of all kinds of people. We hear a great deal nowadays about a square peg in a round hole and a round peg in a square hole; of industrial management, scientific management and efficiency, and, all summed up in one short sentence, it simply means the ability to organize and hold your organization together and get the maximum results with the minimum expenditure of time, energy and money. To do this, every man must be interested, must be satisfied, and must co-operate. No better illustration of an organization can be found than that of a cemented rock wall, where all kinds and shapes of rocks are cemented by one bond into a solid rock which can resist almost any pressure and forms a solid foundation on which to build. So it is with the human element in industry, which is made up of all kinds of men and women—the high-strung, the ambitious, the laggard, the indifferent, and hundreds of other types, which can be cemented together into a perfectly good organization if the cement of goodfellowship is used, mixed to proper consistency with patience and applied with the trowel of understanding.

I herewith submit some forms for the keeping of adequate records, showing the efficiency of fixers and weavers on their sections, which records are very valuable inasmuch as those that are producing their required output are not harassed when a department falls below the standard of requirements, but immediately shows to the executive of the department the individuals who have fallen short and when the proper remedy can be applied, also whether or not it is due to faulty material or to poor care on the part of the operator.

In conclusion, the reasons for paying fixers by the piece are: First. It is more equitable. Second. It insures better production. Third. It will build up the personnel of the organization. Fourth. It allows the overseer more

WEAVERS PRODUCTION SHEET

WEEK ENDING																									
NAME OF WEAVER	LOOM NO.	STYLE	BASIC NO LOOMS PER SET	CUTS REQ PER BASIC SET	LOOMS ON EACH STYLE	HOURS SET RAN	CUTS MADE	CUTS REQUIRED	LOOMS ON EACH STYLE	HOURS SET RAN	CUTS MADE	CUTS REQUIRED	LOOMS ON EACH STYLE	HOURS SET RAN	CUTS MADE	CUTS REQUIRED	LOOMS ON EACH STYLE	HOURS SET RAN	CUTS MADE	CUTS REQUIRED					

SECTION COST

WEEK ENDING	SECTION								
	NO. 1.			NO. 2			NO. 3.		
	SUPPLIES	SHUTTLES	REPAIR	SUPPLIES	SHUTTLES	REPAIR	SUPPLIES	SHUTTLES	REPAIR

FIXERS PRODUCTION SHEET

WEEK ENDING																				
NAME OF FIXER	SECT. NO.	STYLE	BASIC NO. OF LOOMS PER SEC.	CUTS REQ. PER 510 SET	LOOMS ON EACH STYLE	CUTS EACH STYLE	PERCENT STYLE	PERCENT SECTION	SECONDS	LOOMS ON EACH STYLE	CUTS EACH STYLE	PERCENT STYLE	PERCENT SECTION	SECONDS	LOOMS ON EACH STYLE	CUTS EACH STYLE	PERCENT STYLE	PERCENT SECTION	SECONDS

time to devote to his work. Fifth. It will assist in eliminating poor work. Sixth. It will make work for fixer and weaver mutually advantageous and create a better working understanding. Seventh. It will create a spirit of helpfulness. Eighth. It will develop fixers in the art of handling the human element.

Sanitary Water Coolers.

Sanitary drinking fountains that supply cool water to the workmen are now considered necessary in the equipment of modern factories, mills, etc. As a rule the fountains are placed at convenient points in the factory to which cold water is piped from a central refrigerating station, a system that requires considerable outlay in equipment and piping, and is also attended by large loss in radiation.

The cooler fountain here illustrated is a complete unit in itself and simple in construction. The fountain is connected to the water supply system and the drinking water passes through the cooling coil which is immersed in ice water and then flows up to the porcelain enameled bubbler. The fountain is controlled by a valve that closes automatically when the bubbler is not in use, and this eliminates all waste of water.

The ice chamber is insulated and occupies the central part of the fountain. It is surrounded by the cooling coil through which the drinking water circulates. The ice chamber holds about 100 pounds of ice, that, under ordinary circumstances, will last two days. The waste pipe from the bubbler is concealed in the insulating chamber.

This cooler is made by the D. A. Ebinger Sanitary Mfg. Co., Columbus, Ohio.

Every employee is satisfied that he is worth more to his employer than his pay envelope indicates.

Advance thought, in most cases, is nothing more than old-fashioned horse sense dressed up in present-day styles.

Mill Conditions and Market Reviews.

Southern Mill Situation.

The southern cotton mills at this time are perhaps more fully employed than at any time since the south took its place as a permanent factor in the textile manufacturing industry. Many of the southern mills are engaged on government contracts of one kind or another, while others, and in fact all, have many contracts from their regular domestic trade to be taken care of.

Members of the Hard Yarn Spinners Association, representing several thousand spindles in ten southern states, met recently at Charlotte, N. C., for the purpose of discussing the means of meeting the requirements of the government in contracts for war necessities.

It is said that the demands to be made upon duck mills for goods by the government in the near future will be so large that the mills will not have looms enough to produce the quantity desired. The principal theme of the

CLIFTON CORLEY, VICE-PRESIDENT AND GENERAL MANAGER OF THE NECRONSETT MILLS, INC., CUMBERLAND, N. C.

meeting was the discussion of the possibility of securing mills which are making other kinds of goods to use their looms on material desired by the government. Inasmuch as the present output of the mills is being taxed by the large amount of regular business on the books, it is feared that with the great influx of contracts to be given by the government for war necessities, many difficulties will be encountered unless concerted action is taken.

The Necronsett Mills, Inc., Cumberland, N. C., manufacturers of combed yarn, are operating day and night under the efficient supervision of General Manager Clifton Corley and Superintendent J. C. Platt. The mill and surroundings have been greatly improved during the past two years, and since the night work began a number of new cottages have been added to the mill village. These new cottages are all equipped with asphalt roofing with a crushed granite top, making them fire resisting.

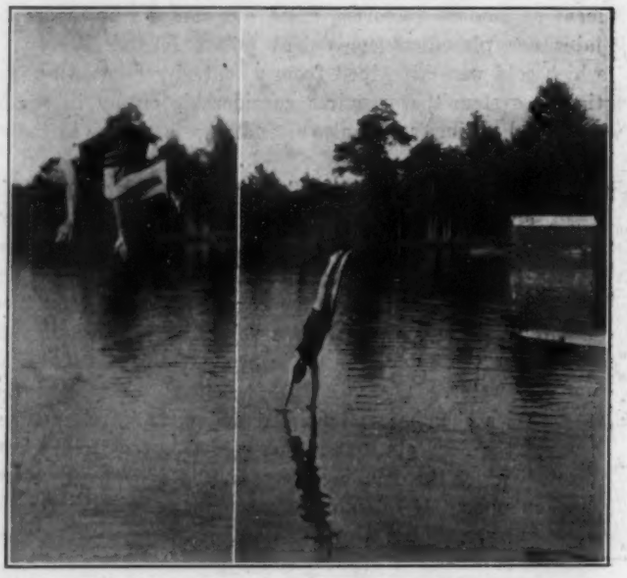
The flower and vegetable gardens surrounding these houses immediately attract the attention of the visitor, while between the village and the mill is located a new library building recently erected by the mill management and placed at the disposal of the Civic League which operates the village. Inasmuch as this mill is located three

A COTTAGE AT NECRONSETT MILLS, FLOWERS IN FRONT; VEGETABLES IN THE REAR.

miles from the nearest railroad station at Hope Mills, the question of transportation became a considerable factor with the mill management. This problem has been satisfactorily solved by the purchase of a large motor truck which is utilized to bring in the raw cotton and carry out the finished product.

The Cathrine Mills Co., at Shelby, N. C., has been organized with Charles C. Blanden as president. This mill will have a capital stock of $15,000 and will operate 40 looms on cotton specialties, using electric power. J. R. Dover, Jr., will be superintendent.

The Marble City Mills at Sylacauga, Ala., were almost completely wrecked by a tornado recently. The roof of



TAKING EXERCISE AT THE SWIMMING POOL, NECRONSETT MILLS.

the mill was blown off and some of the brick walls were blown in upon the machinery, causing much damage. T. C. Russell, of Alexander City, Ala., the president and chief owner of these mills, has announced that the mill will not be rebuilt at Sylacauga, but that a building will be erected at Alexander City, Ala., to which such of the machinery as is good will be moved and that contracts have already been placed with the Saco-Lowell Shops for machinery to replace that which is damaged beyond repair. It is not known whether or not tornado insurance was carried by the owners.

The establishment of a $100,000 cotton mill at Fort Smith, Ark., has been assured, according to an announcement. A six-acre tract of land has been purchased, upon which buildings to cost $50,000 will be erected. The enterprise is understood to be backed by a prominent southern mill operator and banker.

The Motaoca Cotton Mill Co., Motaoca, Va., has been incorporated, with F. L. Robbins of Charlotte, N. C., formerly superintendent of the Savona Mills, as president and manager, and L. L. Mahalley as secretary and treasurer. An equipment of 6,000 spindles will be started up on the manufacture of yarns, and operations will probably be under way by the middle of July.

The capacity of the Trion Co., Trion, Ga., is to be increased by the installation of additional equipment, according to recent report. At present the mill operates 53,808 ring spindles and 1,083 broad and 352 narrow looms.

Sometime ago notice was carried in these colums of the new development of the Marshall Field interests in Virginia. This town will be known as Fieldale, Va., and the trade mark of the goods manufactured in this place will be "Field Quality." Some real development is going on in this section under the active management of W. R. Lynch. David Lindsay, formerly of the German-American Mills, is superintendent of the Field Mills.

The Enterprise Manufacturing Co., Coleridge, N. C., will build a large addition to its cotton mill and equip this new structure for weaving cloth.

New Machinery has been installed in the spinning and picking departments of the Tallapoosa Mills, Inc., Tallapoosa, Ga., and an addition has been erected to the spooler room.

The Fulton Cotton Mills, Athens, Ga., are understood to be increasing their equipment for manufacturing army duck and cotton yarns. Plans are also being drawn for a new library and recreation hall for the use of employes of the mill.

Rules are like women: the more attractive they are the easier it is to follow them.

The New England Mill Situation.

New wage scales went into effect in the cotton mills early in June and the price for weaving standard print cloths is now on a basis of 30 cents a cut of 46 yards, nearly 40 per cent higher than it was 16 months ago. Manufacturers are by no means confident that this marks the end of the rise in labor costs this year as competition for operatives grows keener in consequence of the demands in other industrial channels as well as the steady enlistments for war.

Costs of production, other than those of labor are becoming still higher every week, supply charges showing little or no change for the better. In conjuction with the rise in cotton and the poor prospect for the growing crop, these factors are making mill managers more timid about taking the great business that is offering. Under pressure of the demands for war purposes, the mills are being pushed as never before, and every patriotic impulse is being played upon to keep machines in operation. The feeling of patriotism in the section has been manifesting itself freely during the month, both in the matter of Red Cross and Liberty Loan contributions.

In Fall River, more than $4,500,000 was contributed toward the Liberty Loan, and it is stated that more than half this sum was subscribed by operatives who have taken the bonds of small denominations and will pay for many of them in cash from their savings. The Red Cross collections have been going on steadily among the mill operatives, but since this country's Red Cross called for $100,000,000, additional contributions have been freely made. Some of the mills throughout the section have declared special extra dividends to be donated by stockholders to the Red Cross funds, while nearly all the mill cities exceeded in contributing the amounts expected from them in the national allotment.

This spirit of liberal giving on the part of operatives is regarded as more remarkable from the fact that many of them were born abroad and the proportional non-English speaking peoples in the mill centers is large. The prosperity of the mills and the workers continues in excess of anything previously known and the most gratifying manifestation is that extravagance is not rampant, this being demonstrated to the satisfaction of everyone by the full contributions to the bond buying movement.

Far more business has been offered to mills than they have cared to take or could take. Prices have risen very fast and on the whole they have more than kept pace with rising costs. The uncertainty of the future has been so great that even with all prices going up mills have not contracted as freely as they might have done. Nevertheless, the mills are very few that have not four months business on their books, while of course, many of them

have government orders in hand that cannot be filled this year. Warehoused stocks held for the account of jobbers have been dwindling fast in the past 45 days and would go down more quickly if transportation could be arranged.

Print cloth markets reached unheard of levels in price. For 38½ inch 64x60's, 10¾ cents was paid in some instances for goods to be delivered through to November and 10½ cents was bid for contracts running over the turn of the year. For 4-yard 80 squares 14¼ cents was paid and mills were holding for 14½ cents with no goods to offer for delivery this side of October. Regular print cloths sold on a basis of 7½ cents, which was not the high mark for some constructions.

Printers of staple goods advanced standard staples to 10 cents a yard and then had to withdraw them from sale. For 4-4 64x60 percales, 13½ was paid by jobbers and the goods were finally withdrawn with every prospect of an early advance to 14½ cents. Fine printed goods for the new wash goods season will be opened this month and many of them will be priced about twice above the figures of two years ago.

Ginghams are in a stronger position from the mill viewpoint than they have held in several years. That some part of this is due to the operation of the Gingham Open Price Association is beyond question, as manufacturers have been able to study together the exact state of competition and to eliminate a great deal of needles duplicating of unprofitable styles. Fashion is favoring plaid and gingham designs, while the serviceability of the cloths is again appealing to consumers. Jobbers have paid 12 cents for staple ginghams to be made, and some of the dress ginghams have sold as high as 14½ cents for quick delivery—the goods that used to sell at 7½ cents regular.

Bleached cottons have advanced by leaps and bounds. Fruit of the Loom cottons are 3 cents a yard higher than they were a month ago and the mills making them are closely sold into November. A similar condition exists with Hills, Lonsdales, and other well known brands. Wide sheetings have been in enormous demand for Red Cross and government purposes. Prices were on a basis of 48 cents for 10-4 Pequot goods at the middle of the month with every prospect of a further sharp advance. The demand for pillow tubing has been active and full and stocks in every quarter have been cleaned up in first hands. The call for cambrics and nainsooks has been persistent.

In the fine goods industry there has been some hesitation owing to the uncertainty of retail distribution this year. This was attributed in large part to weather conditions. There has been a decided reduction in the volume of fancy and novelty goods asked for, and on the other hand mills have discouraged the production of as many goods of this class as were made last year. The mills have not wanted business for occupation and most of them have plenty to do up to October. The quiet business was confined largely to goods for late delivery. On heavy fine goods, such as poplins, piques, gabardines, and similar merchandise, the demand has been good and many cloths of this description are being used as substitutes for wool products.

More than the ordinary quantities of shirtings of high quality were ordered for spring and more will be made for some time to come. There has been much less call than has been customary in late years for the lower grades of silk, or silk and cotton shirting mixtures, buyers prefering good, fine madras showing value and good wearing possibilities. Some very fine quality shirtings have been produced by a few New Bedford mills to take the place of the fine custom shirtings hitherto imported. They will sell for 35 cents a yard in 32-inch widths and are made from 80's warps and count as high as 110x130.

Colored goods have been very active and strong. Staple tickings that sold around 12½ cents a yard before the war are now selling at 35 cents. A 2.20 denim for government purposes was sold at 26½ cents a yard. All goods for working suit purposes are held at value by leading mills as it is impossible for mills to take care of the late business that is offered. Colored duck, khaki of the better grades, and colored drills bring prices that have no relation to quotations of a year ago, in many instances 100 per cent up being quoted.

Brown sheetings and drills have been active and cotton duck of all kinds is sold as far ahead as the government will place orders. A new cotton duck list, 100 per cent above the old one, is being prepared. For 4-yard 56x60 sheetings, 13 cents was paid during the month. For 2.50 drills 19 cents was paid. For some of the wider drills, prices were offered on a basis of 57½ cents per pound. A number of mills that have not made drills in recent years have taken orders for them to meet the government requirements for khaki. Khaki dyeing in immense quantities is going on in all finishing plants both for government and commercial needs. There has been some lessening in the demand for red, white and blue fabrics and this has eased the position of many of the printers and finishers.

The unfilled demand for fine yarns for all purposes is giving fine cloth mills unusual opportunities for using their spinning plants while cloths are slow. All spinning mills are very busy, those making tire yarns having far more than they can attend to. While there are some of the minor cotton industries with fewer orders to be had for trimming purposes and it is not difficult to adjust machinery, once it is determined to abandon fine novelty work.

The leading quilt mills have all the business they can take care of for fall. Some few of the large mills have booked up to the end of the year. There is a very large call for narrow width goods for ship and hospital purposes. Early in the month the towel business was slow but it has improved, especially in the plainer goods. Government orders have helped some mills.

The finishers of fine fancy goods are not as well supplied with business as they were a year ago. At the same time little complaint is heard as other departments are exceedingly busy. The business on fine printed cretonnes and fine linings have been good and some choice work has been brought out to take the place of silks and worsteds hitherto used largely for such purposes.

Machine shops are as busy as they can be. Orders are being declined in a number of instances as deliveries cannot be promised this year. In a number of cases machine shops have been requested to help out in producing machinery to facilitate government work and this has caused a setting aside of some civilian business. The out-

look for machine business is as bright as it can be with costs of material and labor on such extraordinary levels. A great many foreign orders could be taken but home orders are actually more numerous than machinery builders can accept with any hope of giving satisfactory deliveries.

Cotton Comment.

BY H. AND B. BEER.

All records for high prices for more than 40 years have been broken by the recent sensational advance in the market, 25 cent cotton having become a reality in the south for the first time since about 1871, spot cotton having scored a rise in value of about 6 cents, or $30 per bale during the past month.

Much to the surprise of the trade the initial government crop report of the season, issued June 1st, carrying the crop down to May 25th, showed the average condition of the crop to have been the lowest on record for that time of the year. The textile world became uneasy, spinners bought freely of contracts to provide for their future requirements, and as government orders for cotton goods increased, the markets for the raw and manufactured products fairly soared.

With the world's visible and invisible supply of American cotton very small, especially as regards stocks abroad, the stock in Liverpool being the lightest for this period of the season in thirty years, and the world depending altogether on the new crop for next season's requirements, there was no alternative other than for prices to advance to the highest levels in many years past.

While the market is probably weaker technically now, owing to the short interest having been forced to cover, the fundamental features of the situation remain sound. Supplies present and prospective light, consumption large, and crop prospects unfavorable.

Since May 25th, correspondents report no material improvement in the condition of the crop, except in scattered localities of the eastern portion of the belt. Temperatures have been too low, and there has been no rain of consequence as yet in the lower half of the central and eastern portions of the cotton region and in Texas.

In Texas, many sections of the state, particularly the western and southern portion, report corn a failure for the want of rain, and while cotton has held up remarkably well, the limit of endurance has been reached, and unless the situation is relieved by copious rains soon, cotton will begin to deteriorate.

The total average rainfall in Texas for May was 2.77 inches vs. 3.80 last year, 2.47 year before last, 7.68 in 1914 and the ten year normal of 3.60; from December 1st to May 31st only 8.64 inches against 12.70 inches for corresponding period last year, 17.48 year before last, 21.32 in 1914 and the ten year normal of 14.67.

These official records explain the need of an urgent general rain in Texas better than anything else, especially since there has been little or no rain in Texas thus far this month.

It is to be hoped that Providence will intercede in behalf of the trade by providing the needed moisture in Texas at an early date, as Texas has about one-third of the entire cotton acreage in the South. Another crop failure this year, which would be the third consecutive short yield, would be disastrous, particularly during these times of high cost of living.

On July 2nd, the government will issue its second monthly crop report of the season, and will also estimate the acreage planted to cotton in the South this year. Private reports indicate a slight decrease in the acreage, and are to effect that the crop has failed to make a material improvement during the past month.

The staple has advanced owing to these bullish developments, and not because of speculation, as trading has been restricted to an enormous extent; the public not being in the market owing to the large margin requirements; now about $2,500 per contract of 100 bales, which is the least quantity traded in.

Lancashire Notes.

BY AN ENGLISH CORRESPONDENT.

I am writing a week before the Whitsuntide holidays which will in all probability extend longer than usual owing to the state of trade and the difficulty of getting goods exported. The Master Spinners' Federation is taking a ballot of its members as to whether they are willing to shut down for a whole week at Whitsuntide and, even if the 80 per cent of assentors to the proposal, which is necessary for an official stoppage, is not obtained, a good number of firms are likely to extend the Whitsun stoppage on their own account. The Cardroom Operatives' Amalgamation has protested to the master spinners that a week's stoppage would inflict unnecessary hardship on the operatives and has suggested, as an alternative, the working of short time until trade conditions improve. Unless the Whitsun stoppages improve the situation considerably, short time in the near future is certainly to be expected.

The whole of the operatives in the manufacturing section are pressing their claim for an advance of 20 per cent in wages and have all tendered strike notices which will expire on May 26th. The Committee on Production—the Government arbitrators appointed for the period of the war—have, however, their services and a strike is not likely to take place unless there is an unexpected breakdown in the negotiations. This means that the operatives will get an advance of some amount, though not their full demands. If no increase whatever were awarded nothing could hold them back from striking. An increase in the cost of living of about 70 per cent, and in the cost of food of over a hundred per cent, is undoubtedly pressing very heavily on the operatives, many of whom in the manufacturing section are among the lowest paid throughout the trade. Moreover they are making a strong point of the fact that they have had the least advance—10 per cent—since the war of any body of workers. On the other hand, the war has brought heavy burdens and difficulties to the employers who, from this standpoint will be able to put a strong case before the arbitrators.

The recent revision of the list of certified trades under the Military Service Acts was awaited with much anxiety throughout the industry, and it came as a great relief and no little surprise to find that, so far as cotton was concerned, there had been only one minor alteration. Thus, by virtue of this particular revision, no more men are liable to

be taken from the mills into the army. Another piece of good fortune—and there are precious few that fall to the trade nowadays—is that under the national (civil) service scheme the industry has been scheduled as "essential." This, of course, is not more than one would expect, but the delay in declaring where the trade stood, and the amount of agitation that had to take place before it was at last listed among the more favored trades, made the news very welcome when at length it came. The advantage of an "essential" trade is that it may engage new labor, whereas in "unessential" trades only persons who have registered as national service volunteers may take new situations. With reference to this question of a shortage of labor, the military service tribunals in the Oldham area have recommended that the Government should, by order, stop 25 per cent of the spindles in every mill. The tribunals claim that the effect of such a measure would be to make more men available for the army and, at the same time, spread the labor supply more evenly over the various firms. At the present time, some firms and some districts are much better supplied with operatives than others, owing to the varying strictness of the tribunals and the variation in the number of men who volunteered for the fighting forces before the advent of compulsion.

The British Cotton-Growing Association is dissatisfied at the Government's delay in dealing with the question of cotton growing within the Empire. On February 8th last a deputation from the association waited upon the Government and all that has happened since is that an intimation hase been received that there is in the course of formation a committee which will go into the whole matter. A recent conference of representatives of the association and the cotton trade passed a resolution expressing its "deep regret at the delay which has occurred and its disappointment that no definite reply has been received from the Board of Trade on the various points submitted by the deputation." Since then the Government has announced in Parliament that a statement will shortly be made on the subject.

The total value of the balance still unsold of the 1916 crop of the association West Africa, Uganda, Nyasaland and the West Indies, at present in Liverpool or on the sea, amounts to £212,000. In addition to this, the association has purchased cotton of the 1917 crop in Uganda, West Africa and the Sudan valued at £743,000, which gives a total value of cotton, in transit, in Liverpool or in Africa, of £955,000. The association has to pay war-risk insurance at the rate of five guinaes per cent on about £750,000, and the recent increase in the rate of premium from one guinea to five guineas means an increased cost to the association of over £30,000. In Lagos 5,000 tons of seed had to be destroyed owing to lack of freight. In Liverpool this seed would have realized from £13 to £14 per ton.

The annual meeting and spring conference of the TextileInstitute has been held in Manchester. Sir William Mather, in his presidential address, said that, in the past, there had been a sort of exclusiveness in the textile trade which the engineering trade had not maintained. Each firm had been rather careful not to communicate to its neighbor what were the happy conditions which had enabled it to produce a little more profit or produce goods a little better. The Institute, said Sir William, should be able to do a good deal to break down the old exclusiveness and secure the necessary cooperation. To this end it had been suggested that a great building should be erected to include an experimental department, a statistical department, a library, and a meeting hall large enough to enable members to come from Lancashire and Yorkshire to meet and encourage one another. That it was not a poetic dream; it was something they could accomplish if they felt inclined to do so. If every one of the 5,000 textile firms in Lancashire alone gave £10 to the project there would be a capital of £50,000 for its realization. Some firms had already given £100 and he proposed that they should ask all to give £5 and so found a great institute.

Professor W. H. Perkin, of Oxford, in a paper on "The Neglect of Science" admitted that progress in an industry was sometimes the result of shrewd common sense, exercised by men of little education in science. But, in the vast majority of cases, new departures of real importance were the result of hard thinking on the part of men of the highest ability and with a sound training in science and scientific methods. In tackling and solving difficult manufacturing operations it was not too much to claim that the scientific men in the universities had shown how valuable they could be to the manufacturer, whether in connection with munitions of war or in purely industrial operations. There could be no doubt that the war was bringing about a much closer cooperation between the manufacturer and the scientific worker. Large concerns, if broad minded enough, would be able to afford the expense attaching to research colonies, but for the small manufacturer the best scientific assistance could only be obtained by making full use of the universities and technical schools. The results of such use had so far been most promising and the movement would have made greater strides had it not been for the depletion of university staffs owing to the demands of military service.

T. C. Taylor, M. P., a woolen manufacturer who runs his mills on co-partnership lines, opened a discussion on Welfare Work, which has made little progress in this country and is practically unknown in the cotton trade, but to which a stimulus has been given during the war by the work of the Welfare Department of Munitions. Mr. Taylor said that, however efficient, the welfare worker should never fully take over the part of the employer. The welfare worker's effort should be supplementary. The textile trade was particularly complex, and it was essential that managers and foremen should be really interested in their work in the fullest sense. He believed that the best way to industrial peace was by co-partnership and profit-sharing, on a plan which combined the best points in both individualism and collectivism. After twenty years of experience the capital of his firm had trebled, they had three times as many workpeople, and four or five times as much trade. The balance sheet contained nothing for goodwill, and the workers owned more than half the capital. He had found that business was thoroughly worth working for under the conditions he had established. The system was not a cure-all, but it was an immense step forward towards the reconciliation of capital and labor.

Dr. E. F. Armstrong, of Warrington, said that, in dealing with female labor, it had been recognized that the conditions for male labor were not good enough for female labor. The women would not have them. If employers did not treat women properly they could not get any good

out of them. It had been proven beyond question that it was most important that every effort should be used to make life happy in the factory.

Mrs. Marriot, the lady welfare superintendent of the Manchester munitions area, said that the welfare worker was born and not made. She required tact, sympathy and common sense. All welfare workers should be engaged to look specially after the welfare of the employees, as distinct from the welfare of the firm, the latter, usually, being well able to look after itself. The main object of the welfare worker should be to prove to the employees that the welfare worker was there to help them and plead their cause in every possible direction. It was easy to proceed too rapidly in welfare work, and there ought not to be any undue haste in its organization in the works.

The Yarn Market.

The month opened with a seller's market continuing, prices going up on one-third of the volume of business compared with a year ago. Owners of stock yarn bought at prices much below the level of that period were willing to undersell in order to take profits, but the dealer who had no yarn in stock must give spinners' prices or let some one else have the business.

Many hold the speculative situation on the cotton market to be the cause of the present high prices, inasmuch as every time the price of cotton futures advance forty or fifty points yarn prices go up in proportion. It is believed that the end will be disastrous for some if this mad speculation continues.

There were a good many inquiries for single combed yarn on cones 16's to 30's for late deliveries early in the month. Many of these inquiries came from the west where knitters were said to be very optimistic. There were also inquiries for carded yarn on cones for both quick and future deliveries. There were sales during this period of from 15,000 to 50,000 pounds of carded weaving yarns, but the demand was not general.

As the month closes it becomes more evident that the cotton speculators are trying to hold up the market. So firmly do some of the dealers in the Philadelphia market believe that prices are based on speculation and not on supply and demand, that they are doing their best to discourage the buying of yarns for future deliveries. In fact, many dealers will not take business for deliveries starting in the fall. One dealer said he did not want to sell for future deliveries at present prices, as a single night might mean a decline of 25 cents a pound, which would undoubtedly mean cancellations and law suits.

Following are recent quotations on the Philadelphia market:

Southern Single Skeins.

8s	35½ @36	10s	36 @36½
12s	36½ @37	14s	37½ @38
16s	38½ @39	20s	40½ @41
24s	42½ @43	26s	43½ @44
30s	48 @48½		

Southern Single Warps.

8s	36 936½	10s	36½ @37
12s	37 @37½	14s	40 @40½
16s	40½ @41	20s	41½ @42
26s	44 @44½	30s	48 @48½
40s	61 @62		

Carpet and Upholstery Yarns in Skeins.

8-4 slack	37 @37½	9-4 slack	37½ @38
8-3-4 hard twist	34 @34½		

Southern Two-Ply Skeins.

8s	36 @36½	10s	37. @37½
12s	37½ @38	14s	38½ @39
16s	39 @39½	20s	41 @41½
24s	45½ @46	26s	46 @46½
30s	49 @49½	40s	61 @62
50s	80 @81	60s	90 @91

Southern Two-Ply Warps.

8s	36½ @37	10s	37 @37½
12s	38 @38½	14s	38½ @39
16s	39½ @40	20s	42½ @43
24s	46 @46½	26s	46½ @47
30s	49½ @50	40s	63 @64
50s	81 @92		

Northern Two-Ply Carded Peeler Skeins.

20s	44 @44½	24s	47 @47½
26s	48 @48½	30s	53 @54
40s	70 @71	50s	80 @82

Two-Ply Combed Peeler Skeins.

20s	60 @61	24s	63 @64
30s	72 @73	40s	80 @82
50s	90 @92	60s	98@$1.00
70s	$1.05@1.10	80s	$1.25@1.35

Southern Frame Spun Yarn on Cones.

8s	41 @42½	10s	42 @42½
12s	42½ @43	14s	40½ @41
16s	41½ @42	18s	43½ @44
20s	45 @45½	22s	46 @46½
24s	49 @49½	26s	51 @51½
30s	53 @54	40s	63 @64
30s tying-in	49 @50		

Northern Mule Spun Carded Yarn on Cones.

10s	45 @45½	12s	45½ @46
14s	46 @46½	16s	46½ @47
20s	49½ @50	24s	53 @53½
26s	54 @55	30s	59 @60
40s	68 @70		

Northern Mule Spun Combed Peeler Yarn on Cones.

10s	56 @57	12s	57 @58
14s	58 @59	16s	59 @60
18s	60 @61	20s	61 @62
24s	64 @65	26s	66 @67
30s	70 @71	36s	76 @77
40s	81 @82		

The Advertising Contest.

The winner of the advertising contest in the May number was W. E. G. Robinson of Charlotte, N. C.

The Winning Letter.

EDITOR COTTON:

"Dixielite" to my mind is the best advertisement in the May issue of COTTON, simply because it portrays a bad existing condition, and at the same glance one can see the good results claimed for "Dixielite." In this advertisement one is attracted by the cut to such an extent that the reader will want to know about an article that is so cleverly demonstrated that he will read the article. This article is so worded that the multitude can understand, and after reading leaves a deep impression of the article.

Advertisements of such nature are always good. They attract at first glance by showing a bad result without the article, and a good result with the article; then one is interested enough to want to know more to the extent of reading the type matter, which is the object of all advertising.

(Signed) W. E. G. Robinson, Manager.
Robinson Mfg. Co., Charlotte, N. C.

Charlotte, N. C., June 7th, 1917.

EDITOR COTTON:

Your letter of the 5th received and contents noted with a great deal of pleasure. It was quite a pleasant surprise to receive the gauge; it is very compact, and I am quite sure I will get a great deal of pleasure from its use as well as correctness in measuring. Again thanking you, I am,

Very truly,

(Signed) W. E. G. Robinson.

COTTON MANUFACTURING.

Fire and Water in the Carding Department.

BY GEORGE S. BROWN.

There are two things that a carder especially dreads: One of them is fire, the other is water. Either of these two elements will produce havoc in mighty short order and since fire and water give more trouble in the picking and carding rooms than in any other place in the mill, a carder should know how to handle these emergencies. A few suggestions of a practical nature may be interesting if not beneficial.

The subject of fire is the one we will consider first. I have divided the subject into a number of parts, these include: "Causes of Fires," "Preparation," "Fighting the Fire," and then under the heading of "Cleaning Up," I have included the question of water.

CAUSES OF FIRES.

Fires in the picker room are caused by nails, bits of iron, travelers, match heads, etc., that are in the cotton (usually waste) fed to the beaters. The beater blades strike this foreign material and sparks ensue which frequently start a fire.

On a card, fires are caused by the licker striking a fragment of metal in the lap, by the licker clothing loosening up and striking the feed plate, by a card out of level making side waste which gets pinched between the cylinder and card frame, and now and then a smudge is started by a traverse grinder striking sparks, but a fire of this sort rarely does any damage on account of there being no cotton in the card.

Drawing frame fires are caused by cotton being wound in around the necks of the bottom rolls, and by "bung-ups" where the driving belt is not shipped onto the loose pulley, but stays on the tight pulley around which it slips, producing excessive friction.

On the fly frames, the main causes of fire may be traced to dry spindle steps, spindles stuck in bolsters, and bobbins where the roving has run over the top and twisted about the spindle where it gets inside of the bobbin and binds tightly.

Oother causes of fires in the carding room or in fact, in any room, are hot bearings from lack of lubrication, moving belts or pulleys chafing against trucks or cans shoved up against them, and belt shippers out of adjustment so that they chafe or come in contact with the belt or belt clamp. Stand in a room where the speed is running but the machinery still, and note the belt clamps that are clicking against the shippers. Every one of these is a fire menace. A moment with a wrench will usually remedy the trouble which in most cases is caused by the shipper being struck with a roving box. Loose pulleys are another source of trouble. While it sounds very well for an overseer to say, "We never oil loose pulleys," meaning of course, that when the speed is running so is the machinery; still there are times when the speed is run for an hour or so with the machinery idle. Dry, loose pulleys at a time like this are sure to call attention to themselves by screeching, rattling, and not infrequently by a flash of fire.

PREPARATION.

It is a very important matter to be prepared for fires, and that means to have things to work with, to have them in correct condition and in the correct places, and finally to know how to use them.

All mills are supplied with sprinkler systems, and if for any cause whatever, the water is shut off from the system, be certain, *be sure* that it is again turned on as soon as possible.

In the picker room, lines of hose complete with nozzles and attached to stand pipes should be in every room where there is machinery. See that bales of cotton, waste, or extra laps are not packed against these lines of hose so as to make them inaccessible. Liquid chemical extinguishers are also a necessity in the picker room as they will put out a big blaze without flooding the room.

Throughout the entire picking and carding department, fire pails painted a conspicuous color should be hung in conspicuous places. These pails should be kept free of waste and all of the time well filled,—say 1½ inches from the top, so as not to spill if slightly jarred. Some overseers seem to think it the proper caper to fill the fire pails after a fire and not again until just before the insurance inspector gets to their department. A man who is tricky about this, will be tricky about other things, and he ought not to be kept in a carding room.

If there is any question as to the shape of pail bottoms, the old fashioned flat bottomed pail is the one to choose for practical use. I would prefer to avoid pails with rounded bulging bottoms. They are successfully designed in this shape to make it inconvenient for the help to use them for other than fire purposes, but they are just as inconvenient in actual use for small fires. You rarely ever need to throw at once, an entire pail of water on a small blaze, but very frequently you wish to set the pail down to remove gear covers, etc., and your bulging bottomed pail rolls over. Once taken from the hook, you must hang onto this pail until empty, or not finding a place to hang it, set it up in a corner. Quickness counts during a fire, and pails that stand alone, assist in quick action. If the help legitimately need pails for other purposes, supply their wants, but have the pails painted a different color from those furnished for fire use.

A liquid chemical extinguisher is very handy around the fly frames.

A mighty good rule to put in force in the picker room, is to see that the help are acquainted with the location of all stand pipes, hydrants, lines of hose, nozzles, ladders, etc. Where chemical extinguishers are installed, the help should be instructed in their use. In this way, when any of these appurtenances are needed, the help can find them immediately and know how to use them. To have extinguished a small blaze by quick action and a quart of water, is deserving of much more credit than to have extinguished a fire that by the inactivity of those present, had assumed such proportions that it required several hose streams to quench it.

FIGHTING THE FIRE.

When a fire breaks out in a picker, the first thing to do is to stop the feed or break out the laps. Let the machine run so as to get the cotton out of it and thus prevent serious damage to trunking or cages. *Use the chemical extinguisher*, if possible, to save flooding everything in the immediate neighborhood, as well as wetting the room below if the fire happens in such a location. Don't hesitate to use a hose stream if necessary, but try to have the water put where it will do good, and not squirted about promiscuously as is often the case.

As soon as a picker room fire is seemingly extinguished, make a careful and thorough search for any signs of fire in the immediate vicinity. Don't forget to examine the dust room and if there is any accumulation present, have it cleaned out.

When a fire starts on a card, break out the lap and then if water must be used, a brush dipped into a fire pail or a bunch of wet waste will be very effective. Try not to wet a card any more than possible.

Drawing frame fires are unusual occurrences, and when they do happen very little damage is done, especially if the frames are kept reasonably clean as they should be.

On fly frames, the first flash generally cuts all the ends and then the fire gets in under the gear covers and roller beam. A chemical extinguisher comes in handy in a case like this, but if it is lacking, don't throw water at the carriage and step rail covers as it will do no good. Open the gear covers and splash water on the blaze with the hands. One pailful used in this manner will be more effective than a dozen merely thrown at the machine.

Quickness in getting into action is what counts. Make it a rule whenever the pungent odor of burning cotton comes to the nostrils, to drop whatever is being done and search out the cause. Many big fires are avoided by finding and quenching a bit of smouldering material.

Whether using chemicals or water on a blaze, fight the flames beginning at the bottom and working upwards. Don't throw water through the blaze. Keep cool and put the water onto the material that is burning.

No matter where the fire happens to be, as soon as it is put out, look into every nook and cranny about the machine for any particles that may still be burning. These if overlooked, may break out into a blaze later, perhaps at night when nobody happens to be actually present, and a very serious conflagration result.

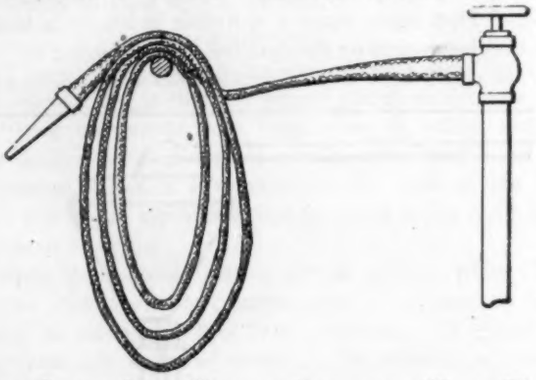
CLEANING UP.

As soon as a fire is under control, turn off water supply to stop any sprinklers that may have been opened by the heat, and prevent further and unnecessary wetting and damage. See that the master mechanic or whoever looks after such work, immediately fixes or renews the opened sprinkler heads and then be *sure* that the water is turned into the pipes again.

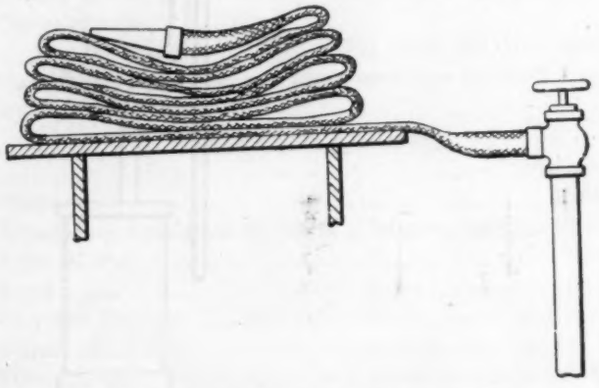
Have all wet or smouldering cotton taken out of the building to avoid any further danger. Then pay strict attention to the machinery. Immediately set about drying it out. Wipe off every wet part with waste and then polish with dry waste and whiting or black lead to prevent rust. Get the machines running as soon as possible as the air currents will assist in the drying process. When the first cotton is started through, throw plenty of whiting into the feed. Of course, burned parts of pickers, such as lattices, aprons, etc., will have to be renewed, but many times after a fire, the damage proves to be nothing more than the actual cotton consumed.

If cards get their clothing wet, it is a good plan to remove as much of the casing around them as possible, and then start the cylinders and doffers, after stripping out all wet fibre. Apply the burnishing brush to wet clothing and dust on plenty of whiting or black lead. Wipe all plates and polished parts perfectly dry.

Whenever drawing frames or fly frames receive a wetting, they should receive a thorough scouring to prevent



HOSE COILED LIKE THIS IS LIABLE TO KINK WHEN GRABBED FROM ITS SUPPORT. A KINK WILL EITHER STOP THE FLOW OF WATER OR BURST THE HOSE.



NO MATTER HOW THIS HOSE IS YANKED FROM ITS SHELF, IT WILL NOT KINK.

the rusting of rolls. The top rolls, if leather covered, should be wiped dry and any that show signs of opening at the laps, should be thrown out. Those rolls that are varnished, should receive a fresh coat before replacing in the machines. Every bearing should be oiled or greased thoroughly, and before starting up, any wet back drawing or roving should be removed or a bad mess will result when this stock reaches the rolls.

While it is a very excellent plan to make just as little waste as possible, still, in a case like this, if there is a chance that material is wet, make waste of it if it is drawing, or pack it away to dry if roving and not stained. A glance at the top of a can of drawing tells but little for considerable water may be at the bottom. The frame may be started and run all right for a while, but sooner or later up comes a wet place and there is trouble. With varnished rolls, this means changing the entire delivery for new rolls to be repeated later. Dump any suspicious looking cans.

If possible, have heat turned into the room and kept on all night to further assist in the drying process. See that all fire pails are refilled and replaced on their hooks. Recharge any exhausted chemical extinguishers.

Now and then it happens that a sprinkler head is accidently opened. The two most frequent causes of this are: a belt breaking and one end of it hitting the sprinkler, or the striking of a sprinkler with a broom when brushing down the ceiling.

In some cases the sprinkler is opened sufficiently to blow a brisk spray that wets everything in the neighborhood. Then again when a sprinkler is hit by a broken belt that has caught on the shafting and is banging the ceiling, the entire head may be knocked off and a deluge follow. If the escaping water comes directly down in a single stream, it will not do as much damage as it will if spraying in all directions and wetting things in a large circle.

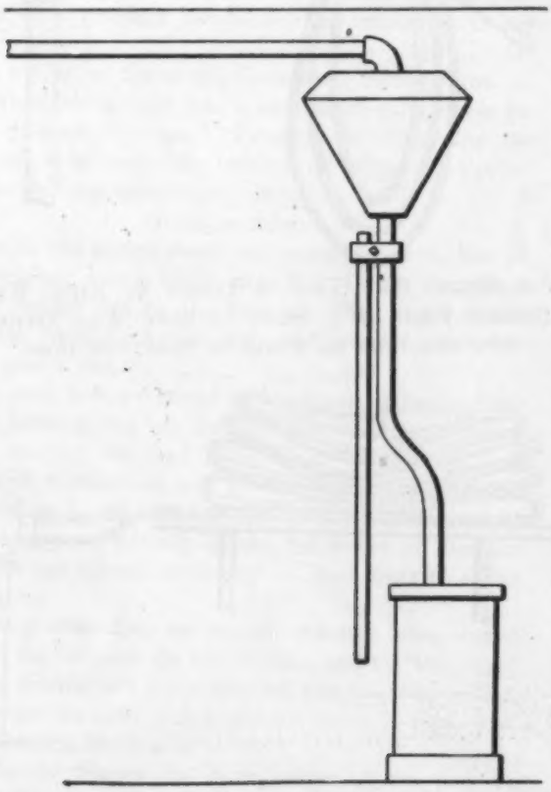


FIG. 1. THE FUNNEL AND HOSE DEVICE IN POSITION. NOTE THE SHAPE OF THE FUNNEL TOP TO KEEP THE SPRAY INSIDE.

When a sprinkler is struck and starts leaking, the first thing to do is to rush for one of the long handled brooms used for brushing down the ceiling, if it is not already present, and jamb the head of this broom up tight against the leaking head to completely envelop it in a mass of broom corn. This will prevent the water from squirting in all directions and cause it to run down the broom handle in a single stream. Shove an empty drawing can under the handle and keep it there. Shut off the water from the sprinkler system and open the drain pipe to get the water out of the pipes.

Some mills have in each room where sprinklers are liable to be opened and do damage, a large funnel fastened to the end of a stick long enough to reach the ceiling. A piece of hose pipe sufficient to reach to the floor is fastened to the bottom of the funnel, and when a sprinkler opens, the funnel is pressed up against the sprinkler pipe and the head enclosed, compelling the water to run down through the hose. If near a window the end of the pipe is put outside and further wetting avoided. Such a device is shown in Fig. 1.

If at any time a floor in one of the upper rooms gets flooded with water which begins to leak down into the room below, the cards or in fact, other machinery can be protected by unrolling picker laps over their tops. A couple layers of this material will be almost impervious to water even if exposed for quite a long period.

Before closing this article, I wish to speak about one thing more, and that is leaky roofs. There is nothing much more discouraging than to try to operate a carding room successfully when the roof on the building resembles a sieve. Every rainstorm or snow storm means trouble. There will be a drip here and a drip there. A few of these leaks will spatter water enough about to ruin many rolls and make sufficient waste (not to mention ruffled tempers) to almost pay for repairing the roof. A carder and his fellow workmen, working under a difficulty like this, deserve a whole lot of sympathy; but since his life is being made miserable by the roof, it is "up to him" to harp at headquarters about it and make life miserable for them until the trouble is remedied. When this is done, doubtless a good many fire pails that are scattered about the room as receptacles for dripping water, will be returned to the hooks where they belong.

The high prices being paid for old rags, rubber and waste paper encourage the collection of these articles by organizations seeking to raise money. Recently a fire started in a Lansing school from spontaneous ignition of waste material stored in packing cases.

Dyeing, Bleaching and Finishing.

Bleaching and Finishing Bag Cloth.

BY WILLIAM B. NANSON.

In the bag trade, we have been told, that almost any kind of a white would answer if it was only cheap enough; we rather beg to differ from this. The production of a bright, permanent, well bottomed white is eminently desirable, so that the scouring and bleaching process shall have effectually operated throughout the fibre, otherwise, the cloth will not only be lacking in brilliance of tone, which may be of secondary importance from some bleachers viewpoint, but it will also lack the capacity to acquire the physical properties which should result from the application of various finishing processes.

For instance, the cloth must be rendered uniform in its capacity for absorbing and retaining moisture, as this has a most important bearing on the subsequent calendering and printing, and especially must it be readily absorbent to the stiffening, weighting, tinting and other ingredients applied in finishing, or, the moisture from the wet starch will not penetrate evenly through the goods from back to front, and they will not only be mottled, but the back and face will be two distinct colors, because we would remind our readers that this class of work is starched on one side only.

The bleacher, therefore, who is ambitious to produce perfect work must pay particular attention to the initial processes of bleaching, as any undue reliance on the subsequent chemicking process will only lead to tender goods and a whitness which will not stay white.

STEEPING.

The first process to which the goods should be subjected is that of steeping; to accomplish this the goods should be wet out in an ordinary washing machine in water at 140 degrees F. containing 2 pounds of Diastafor per 100 gallons and plaited down on a stillage and allowed to lay over night. This steeping is important and it pays—it is better than a boil—it saves ultimate chemic. After steeping, the goods should be washed into the kier and boiled for about 10 hours, under 10 to 15 pounds pressure, using 120 pounds of caustic soda and 60 pounds of soda ash for a three ton kier. After boiling, wash well and chemic at 1 to 1½ degrees Tw. for about 5 hours.

After chimicking, the goods must be well washed and squeezed as dry as possible into the finished bins. Do not mangle but take the goods up from the finishing bins and pass them directly through the scutcher into trucks and from these over the dry cans and dry thoroughly. Do not use a scutcher and mangle geared together, as is usually done, as it will crack the selvages owing to the impossibility of gearing both at the same exact surface speed. We might add that cracked selvages will also occur if threads or rags are allowed to collect round the ends of the bearings of the wooden roll in the bottom of the washing machine box (referring to the log roll machine), for it must be borne in mind that this roll is turned by the cloth, and if it does not run free it will act as a brake and tighten and strain the cloth to such a degree that every time a kink or a tangle in the goods strikes a poteye, or, any sudden pull comes on the goods, the selvages will be cracked as is the case between the scutcher and the mangle.

After the goods are dried they are better if heavily calendered to close up the threads.

STARCHING.

It has ever been a popular superstition among finishers that wheat flour is the only proper starching agent to use in filling bag goods, and when flour is selling around four dollars per barrel there may be something in it, but at present prices it is prohibitive and even at the low price it is not as much used now as it was in the early days of cotton finishing.

Good flour should be an almost perfect white, fine powder with the very faintest trace of yellow; its odor should be sweet and free from sourness. It should be free from any traces of acidity. On pressing a portion smoothly on a piece of glossy black paper, no trace of bran should be perceptible, the amount of adhesiveness should be such, that on pressing some firmly in a cup and turning it over in a heap, the mass should retain its shape for some time.

The following analysis of wheat flour will give some idea of its constituents and the proportions in which they are usually present.

WHEAT FLOUR ANALYSIS.

	Percent.
Water	13.56
Nitrogenous Substances (Glutens, Albumens, etc.)	12.42
Fatty Matter	1.70
Sugar	1.44
Gum and Dextrine	2.38
Starch	64.07
Fibre	2.66
Ash	1.77
	100.00

The nitrogenous compounds present in flour are usually included under one head—gluten—but this is wrong, as nitrogen undoubtedly exists in flour in several forms, Albuminous, peptic, nitrates, etc.

From the foregoing some idea may be formed of the organic composition of flour. It has also been decided that the commercial value of flour is in proportion to the amount of gluten it contains. It is not to be inferred from this that gluten is the most valuable constituent of flour available for starching purposes, for, of course, the starch plays the most important part; but it is esteemed an important test of the condition or quality of the flour, and from the variable proportions different wheat flours contain, it would appear possible for some to be of three times the value of others, this wide difference might not often be met with, but it is not an uncommon thing to find flour so poor that it would be comparatively dear if twenty per cent less in price than a good quality.

Flour is subjected to adulterations of two kinds—the first is the mixing of mouldy flour and the flours of rye, barley, oats, corn, rice, etc., and the second species of adulterations is the admixture of various mineral compounds with the flour, for the purpose of increasing the weight.

With reference to the first of these adulterations we may say that in the musty or damaged flour the gluten has been known to disappear entirely, and in the second —the addition of mineral compounds—one would think the fraud too palpable to pass unnoticed. The presence of Glauber's salts might, and often does, readily escape observation.

To give a laborious method for the analysis of flour would take up too much space here, but we may say that it would be a good plan to subject all flours to a preliminary weighing. A small tin measure, for instance, having been carefully tared, is filled with dry flour of known good quality, accurately weighed, and the weight noted. This will afford a standard of comparison and a near approach to this will be indicative of similarity of quality in any samples that may be afterward tried. Each sample must be carefully dried after weighing and reweighed to determine the percentage of moisture.

Good flour should yield from 16 to 23 per cent of moist gluten. The quality of the gluten should be tested by pulling it out with the fingers and the more tenacious it is, the better the quality of the gluten, and in consequence the better the quality of the flour. Gluten posesses very strong adhesive qualities and is therefore capable of fixing large quantities of china clay, barytes, and other mineral matter on the cloths; it is therefore, for the finisher, the most important constituent of the flour.

FERMENTATION OF THE FLOUR.

The flour must be added to the water in mixing tanks fitted with agitators and must be added in such a way that there is always a known standard quantity of flour to each gallon, say five pounds, after passing the flour through a sieve into the water and thoroughly mixing until the lumps are all dissolved, the mixture is allowed to stand for a time, varying from one day in summer to three days in winter; this is done to destroy the cohesion of the gluten and great care and skill are required to stop the fermentation at the right time or the gluten will become destroyed altogether. A good attenuation is the great desideratum and this is dependent upon a few considerations which it might be worth while, at this stage, for us to discuss.

There are various species or stages of chemical decomposition characterized by the term "fermentation" such as, the lactic, the ammoniacal, the acetons, the panary, the putrid, the vinous and various others whereby certain compounds are generated but always by a direct or an indirect species of oxidation and many of which pass from one to the other as the oxidation becomes more or less complete. Difference of the temperatures has a great influence on the celerity or slowness of it. The quality of the flour affects it to a considerable extent, in bad flour it is sometimes rapid and uncontrollable. The quality of the water also influences it.

When flour and water are left to undergo a spontaneous decomposition in an open vessel the various parts of the mass are differently affected. The saccharine part is disposed to become converted into alcohol; the mucilaginous has a tendency to become sour and mouldy; while the gluten, in all probability, verges toward the putrid state. A change in the chemical make-up of the several component parts must then take place in a progressive manner, and when this fermentation has proceeded so far as to form a yeasty mass, although it still retains some adhensive properties, the whole nature and character of the size has undergone an important change, not, perhaps, such as to entirely prevent its use, but sufficient to materially diminish its value and render the results desired from it uncertain.

Being at the best an uncertain and variable operation, even when the best precautions have been taken, it would be well if this fermentative process were substituted by a more systematic and reliable one and it has been found that this can be done.

It has been found that flour and water agitated together for three hours with an infinitesimal addition of caustic soda became of precisely the same constituency, color and condition, chemically and physically, as flour that had been soured under all the old time conditions, and that its condition could be depended on to be always uniform. Moreover it was also discovered that flour so treated was absolutely immune from fungoid growth and that goods sized with it would not mildew. The fermentation and souring of flour is only valuable because it renders the gluten soluble and this same result is obtained by adding caustic soda to it.

To prepare the flour for the starching room it would be necessary to have a stock tub, or say, two tubs, so that one could be drawn from while the other was mixing, each must be fitted with a wooden agitator and should hold several hundred gallons. Now to every 80 gallons of water add 240 pounds of flour, start up the agitator and add (after flour is all thoroughly wet) one pint of caustic soda at 68 degree Tw. It is better to add the caustic soda in two or three pails of water so that the strong soda will not be brought in contact with the flour.

This can be used as a stock tub and can be made stronger or weaker as desired, keeping of course the same proportion of caustic soda and flour. Each gallon will represent so many pounds of flour and can be drawn out from a valve at the bottom as required for the starch boiler. The china clay and other ingredients are then added to the flour in the boiler (or mixer as we call it) and the whole is properly boiled. This is generally affected in about twenty minutes with a good pressure of steam.

CHINA CLAY.

China clay is the most important of the filling and weighting substances used in finishing. It is always employed to produce the most heavily filled finishes in which it is necessary to load the cloth to its utmost capacity. The tendency of clay finishes are to produce a stiff finish and a rough or dull surface effect, but this can be modified by the admixture, in the making, of suitable ingredients to soften it down.

China clay, when pure and of good quality, is quite white, if it has a yellowish or reddish tint, this is due to the presence of such impurities as oxide of iron, or organic matter; some makers disguise this off color by the addition of a small quantity of ultramarine blue. The

best qualities have a soft unctuous feel, the commoner qualities being rougher; it has slight adhesive qualities and adheres to the fingers when moist. China clay is used in the finishing of cotton goods more especially on account of its weight, durability, opacity, inertness to atmospheric influences, and its cheapness. It is rarely adulterated, except perhaps, some times with a trace of blue to improve the color and this can be easily detected by testing with a little weak acid if ultramarine has been used.

Fineness is of great importance in the value of China clay as a filler, for the finer a clay may be and the freer from grit, the closer and more compact the finish it will give. There is no method of expressing the fineness of china clay in actual figures, and the only way is to make a comparison with a known standard sample, for instance, five grams can be weighed out and ground up well into a paste with water and washed into a graduated glass cylinder and filled up to a certain mark with water; do the same with five grams of a known standard, allow both cylinders to stand and note the length of time taken for the clay to settle down to a given mark. The behavior of different samples of clay under this test will give a pretty correct idea of their relative fineness some settle out slowly and gradually, others quickly, showing conclusively that the latter must be coarser than the former. In some samples part of the clay will settle rapidly, leaving a white cloudy mixture in suspension that will settle more slowly, showing that the sample contains two qualities, one fine and the other coarse.

By always being careful to conduct the tests in the same way and carefully noting the time taken for the various samples to settle, a good line of figures can be obtained which will serve as a guide in testing future samples. China clay should be boiled before using, not only to thoroughly dissipate all lumps that may be in it, but it seems to make it smoother and it fixes itself on the goods better. Good, well prepared china clay can be used in conjunction with all other finishing materials, being perfectly neutral and free from traces of either acids or alkalies, it is also very stable and not easily attacked by either acids or alkalies. It can be used with either acid or alkali blues.

MIXING.

Among the accessories appertaining to a bag cloth finishing department should be a tank for mixing and boiling the china clay and a series of sieves of the finest copper mesh. The tank consists of a large tub fitted with a rotating agitator and a steam pipe. The clay should be always boiled and agitated until the lumps are all broken up and the mass is smooth and homogeneous. It should then be run from an opening in the bottom of the mixing tank through a sieve into the stock tub. A slight calculation will tell the starcher how many pounds of dry clay there are in each gallon of this mixture, and he can make his mixings accordingly. From this stock tub the clay is passed through a fine seive again into the final boiling tub, to be mixed with the flour, soap and blueing and boiled for about 20 minutes to a half hour.

If the plant is a large one and the daily output of goods to be starched and filled with clay is of a great and steady volume it is always advisable to boil the mixing in a dough mixer, such as is used by the National Biscuit Company in their factories. It needs no attention to speak of. The various materials are put into it with the necessary water, the worm is started and the steam is turned on and when the boiling is completed the cover is opened and the size run or shoveled out into a bin or tub to be cooled off ready for use in the starch mangle. We would say here that all fillings made from flour and china clay run better, and fill better, when used cold, or comparatively cold, than they do when hot, therefore all mixings should be made ahead of their use so as to cool off.

It is always advisable for the starcher to confine himself to one heavy standard mixing and after boiling it, thin it down with cold water to the proper consistency for the various grades of goods he may have to fill. In case of exceptionally low, open goods it pays to run them twice in a thinner size rather than attempt to fill them at one run in abnormally thick filling; but here the efficiency manager steps in with a pencil, and a pad and a veto, for the average efficiency manager is usually long on production and short on quality.

STARCHING.

It is not possible here to give any arbitrary recipt for a standard starch mixing for bag goods. The starcher must use his own judgment and work out his own salvation, but the following has worked well with the writer:

120 pounds of flour from flour mixing tank.
180 pounds of china clay from clay mixer.
10 pounds sol oil, olein oil or soap.
90 gallons water.
Blue with edges blue to shade.

The starch is entered first into the boiler, and the other ingredients after; the heavier clay fillers last. After the starch has begun to thicken, constant stirring is essential, the soluble ingredients of the mixture go into solution but the insoluble only remain in suspension, and very thorough mixing is therefore necessary to insure the production of a perfectly homogeneous mixture. The steam is turned on full for a short time to insure a thorough gelatinization of the mixture.

We might as well say here that the consistency of a mixing is much influenced by the length of time which it is boiled, and a starcher who wishes to keep his finish uniform will be particular always to boil his mixings the same length of time, say twenty minutes in a dough mixer which is a closed vessel. The longer starch is boiled after gelatinization, the thinner it becomes, and any difference in the time of boiling will make a difference in the ultimate finish and appearance of the goods. Much of this, of course, is caused by the condensation of the steam diluting the mixture, but much of it is also due to the heat changing the viscosity of the starch.

We may say here, however, that many English starchers, who make clay filled work a specialty advocate the boiling of the flour size first, and then entering in the clay and other materials in a cold, or, at least comparatively cold, condition, which reduces the temperature of the whole mixing to about 150 degrees Fahrenheit and then mechanically stirring the whole mass (without further boiling) until it is thoroughly smooth and homogeneous and this idea looks good to the writer, and is worth a fair trial, I think.

[NOTE: Where the steam line is a long one, and the amount of condensation considerable, it is advisable to

remove as much moisture from the steam as possible. This may be done by the use of a separator, or a U-bend of suitable length and properly trapped will aid. This can be fixed up by the master mechanic and in plants using low pressure steam will be found to lend valuable assistance toward the production of a thick and heavy size suitable for Scotch mangle work.—The Editor.]

THE MANGLE.

I have no use for the Scotch mangle for filling bag goods as in my opinion it is too slow, too expensive, and damages too many goods. After thoroughly drying the goods, as previously explained, they may be wound onto large rolls of 1000 yards or more, taking care that all are wound without any creases in them and that the seams are all on the same side. Then run through a Tommy Dodd mangle (Fig. 1) with the seamy side next to the bowl.

In this machine the cloth *A* may be passed through the starch box *B*, following the direction of the arrows, with one face closely applied to the bowl *C*, so that it may be only starched on one side. A revolving agitator *D* main-

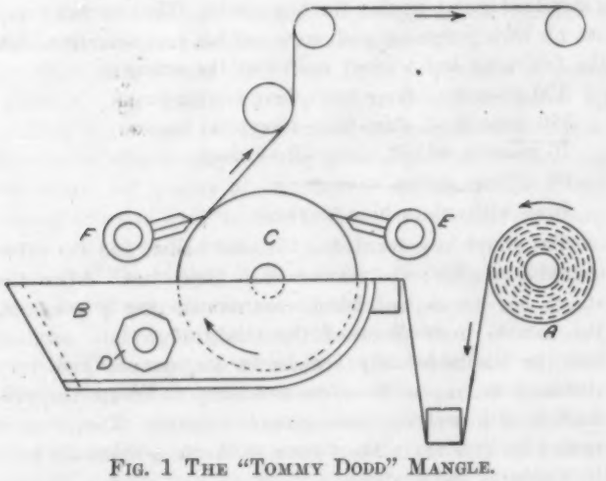


FIG. 1 THE "TOMMY DODD" MANGLE.

tains the regular application of the starch to the exposed face of the cloth. A rubber scraper, or doctor, is mounted on the hinged shear *E* and scrapes the surface of the bowl so that it always presents a clean surface to the incoming cloth. On the opposite side a similar metal doctor *F* removes the excess of starch from the back of the cloth and ensures the uniform distribution of the filling. The quantitive control is by adjustment of the weight on the doctor levers and the inclination of the doctor. In the cut (Fig. 1) we have shown only the working parts and nothing of the frame.

The manipulation of this mangle requires some care. In addition to the adjustment effected by the variation of the weight and inclination of the metal doctor, its edge must be kept perfectly parallel with that of the bowl. Care must also be taken to see that no grit is allowed to lodge between the doctor and the bowl or it will scratch a ridge round the bowl, but this need not occur if the mixing is carefully sifted. Also the bowl must be kept absolutely clean by the rubber doctor *E*, even if a little water has to be cometimes poured along the face of it. This mangle will starch an enormous quantity of goods as it fills better at a fast speed than at a slow one. It may be run at a rate of from 200 to 300 yards surface speed per minute. The

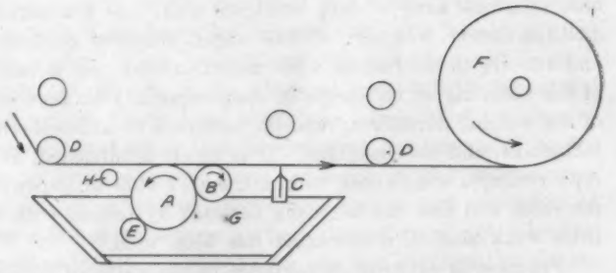


FIG. 3 A "BACK FILLING" MACHINE.

goods are run over guide rollers and plaited down in a truck.

After starching the goods should be dried, if possible, on a back drying machine which exposes the back or unstarched side of the cloth only to the cylinders.

Now if the goods are of a very low quality and cannot be filled by one run on the "Tommy Dodd" they may be taken back after drying and run through a back filling machine like Fig. 3 which works as follows:

The starch box *G* being filled two-thirds full of starch and the machine being started, the cloth passes in the direction of the arrows. The roller *A* carries round a film of starch, the thickness of which is regulated by the press roll *B*, which can be adjusted closer or farther from the roll *A*. The cloth after passing in contact with the two rolls *AB*, is drawn tightly over the metal doctor blade *C* where the starch is spread over the surface of the goods and the superfluous size is scraped off. An agitator *E* is placed in the starch box to prevent the heavy clay in the mixture from settling. *DD* are rollers which may be regulated in height to give more or less contact and consequently more starch, on the cloth as it passes over the rollers *AB*. The small rod *H* is shown under the cloth between *D* and *A*. It is attached to the moving parts *DD*, and raises and lowers itself with them. The cloth passes direct from this machine onto the drying cans at *F*. These cans should be geared to the backfiller and run at the same surface speed, it is also quite necessary that these cans should dry on one side only as before indicated, though the writer has run goods many times from the back filler onto the ordinary kind of cans, by lapping the first four cans with cloth. The starch for this backfilling machine is the same as already given for the Tommy Dodd but thinned down with cold water to the consistency of whitewash.

[NOTE: While we do not wish to raise any issue with the author as to the efficiency of the "Tommy Dodd" mangle, the yardage production of the Scotch mangle may be very much increased if care is taken to keep the size very stiff and dry—like stiff putty. A softer size allows the cloth to follow the large wooden bowl which is geared to run very slow, but with size of the proper consistency, the cloth will follow the top or brass bowl and the speed may be made equal to that of a "Tommy Dodd" mangle. A bad feature in securing the speed is that if a small piece of grit passes through the "nip," it passes at the speed of the lower bowl and a slit several yards long is cut in the cloth before the lower bowl carries the grit out of contact. However, as the writer of the foregoing article states, if care is taken in the preparation of the clay, there will be no grit.—The Editor.]

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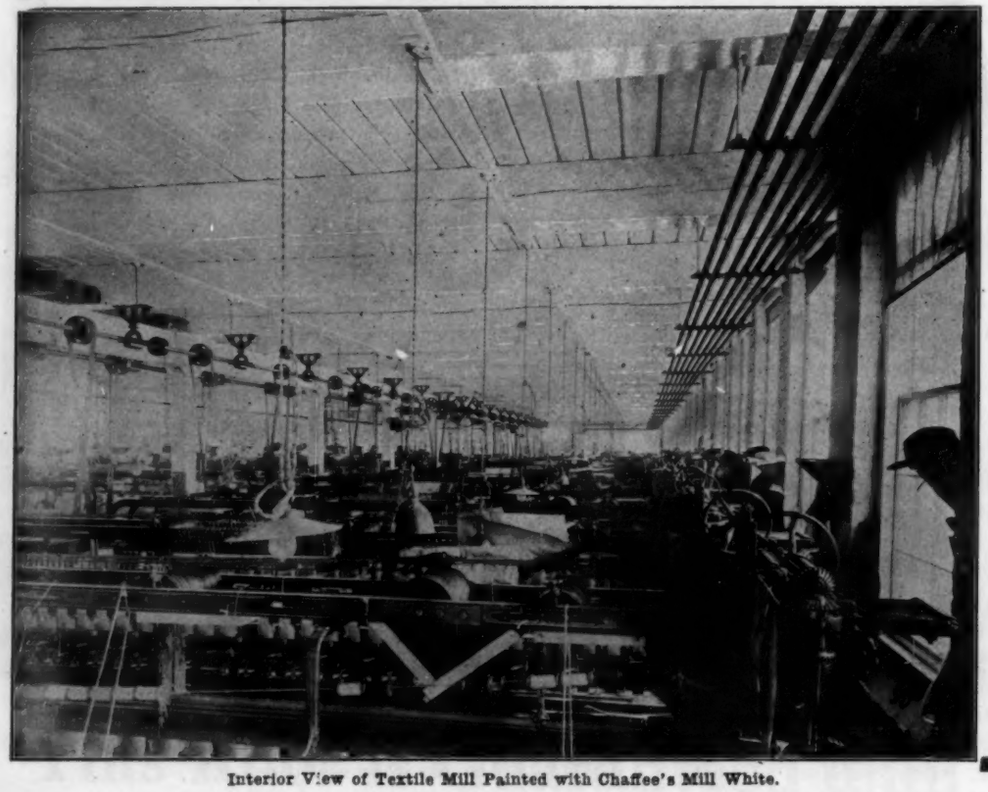

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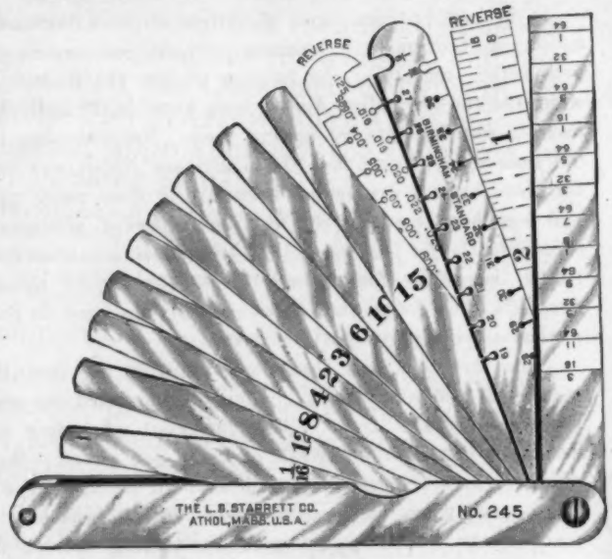

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The judges will be the Editor of COTTON and the Manager of the Service Department, whose decision will be final. The name of winning contestant will be announced in COTTON'S pages.

Address Contest Department of COTTON, Atlanta, Georgia.

The New Dyestuff Industry.*

BY H. GARDNER MCKERROW.†

It may be of interest to sketch briefly the position in which this country found itself at the outset of the European war.

This country is the largest producer of the basic material from which aniline colors eventually come—coal tar, but it is doubtless appreciated that there are many steps to be taken between the basic material and the finished colors.

A wide line of intermediates had first to be manufactured and these, with the exception of aniline oil, had never been attempted by American manufacturers on a commercial scale.

Prior to the war there were only five concerns engaged in the making of aniline colors, and these were almost entirely dependent on the importation of intermediates from Europe, and principally from Germany.

At one time, about 1880 there were as many as ten engaged in the industry, and there appeared to be every prospect that the business would thrive and develop, but unfortunately, by one of those freaks of legislative wisdom with which this long suffering country is periodically afflicted from Washington, a new tariff act was passed which reduced the protection to the industry to such a point that seven of them were wiped out of existence.

To the three remaining, which continued in business more with an abiding faith in the future than with a sense of being engaged in a profitable industry, there were added at long intervals, two others, the last one commencing business only a few months before the outbreak of the war.

The consternation therefore, of our color using manufacturers may be imagined when the storm broke in July and August of 1914, and the last cargo of German dyes reached this country. Prophecies of the destruction of many industries, the shutting down of factories, the necessity of Americans having to wear all white clothes, were freely made, and the daily press with its insatiable appetite for calamities added to the disturbance until the average manufacturer hardly knew where to turn.

By the first of 1915 practically all the stocks of dyestuffs held by the German agents on this side were either exhausted, or were being closely held for speculative profits.

The real natural dyewoods, such as logwood, fustic, sumac, cutch and quercitron rose immediately to premium heights, and prices obtained for them were anywhere from 200 to 1000 per cent higher than normal. Logwood, for instance, which ordinarily sells for about 7 cents per pound, was readily disposed of for 50, 60, 70 and even 80 cents per pound.

Before the creation of the dyestuffs industry these were the dyes commonly used, and the blues, blacks, browns, yellows and their complements of our grandfather, and even of our father's days were all produced by these natural dyewoods.

There have always been some mills which have used these materials, and which have built up good reputations for the superior "blooms" and richness of their colors. Properly used, these natural dyestuffs are excellent, and give results on certain shades which compare very favorably, in point of fastness and depth, with aniline colors.

The chief objection to their use from the manufacturers' point of view, is the fact that they are not as easily handled as aniline colors; that is to say they have to be dyed on a mordant, thus making the dyeing operation a two or more bath proposition. And this brings me to a point which is well worth noting. When the natural dyewoods were exclusively employed we had dyers who *were* dyers. They knew how to prepare their dye baths, they knew how to handle and blend their mordants, and above all, they knew how to match their shades. These men, the old time dyers, have for the most part disappeared. With the incoming of the aniline dyes, came the color chemist. Now when a manufacturer has an order for so many pieces of cloth to match a given shade, he takes his sample to a dyestuff house, and they put their chemists to work, and by mixing and blending they produce a color to which they will give a special name, or distinguishing letter or number, and by so doing they tie that manufacturer to them body, soul and breeches as long as he needs that particular shade. No other dyestuff house knows the color by the only distinguishing mark which the manufacturer knows. The dye as he gets it is ready to use, his dyer has no manipulation or matching to do. He simply prepares his dye bath and runs his cloth through; if the shade is not right it is the fault of the dyestuff maker, and he has to make it good.

The present generation of dyers are not as expert, therefore, as their fathers; they are trained to aim for production by the use of improved machinery and the use of dyestuffs ready to their hand.

I do not criticize this; doubtless it is a legitimate development of modern business methods, but one cannot help rather regretting the passing of the old time dyer, who, like the old indigo dyer I once knew in Philadelphia used to test his vats by tasting them. Not only has the old time dyer passed, but the machinery which was used for wood extract dyeing has been largely done away with, and has been replaced by entirely different appliances. Consequently in 1914 and 1915 when our manufacturers found themselves forced back on to the use of natural dyestuffs, they found their plants utterly unsuited to their method of dyeing.

This therefore was the position during the first few months of the war. Every pound of dyestuff from store room shelves and from cellars came out of hiding and became worth dollars instead of cents per pound. Some of the scarcer colors were sold as high as $25. or $30. per pound, when the normal price, perhaps, was only as many cents. Mills commenced exchanging colors; one manufacturer having perhaps, a certain blue left over after the completion of a contract, and needing a red for his current work, would find another who had a red to dispose of, but needed a blue. Sometimes these exchanges passed through three or four hands before everybody was suited.

In the meanwhile, the five existing aniline dyestuff making establishments were devoting millions of capital and every minute of the twenty-four hours each day to improving their facilities and increasing their outputs.

*Extracts from a paper read before the Export Conference at Springfield, Mass.

†Manager Textile Department of the Marden, Orth and Hastings Co., New York.

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They were, however, practically deadlocked at the outset, by the absence of the necessary intermediates. Capital was interested, chemical engineers and builders of chemical appliances were called into requisition, and within a few weeks plants for the distillation of coal tar and the production of intermediates were being materialized as at the touch of some magician's wand all over the country.

Today, ten times as much benzol and naphthalene is being made as was turned out from domestic establishments before the war. An extensive line of intermediates is now being made in American factories, and each week sees extensions, enlargments and additions to the available materials.

In addition to the works making intermediates, there are now upwards of 40 firms engaged in the making of dyestuffs, and the results of these combined efforts, all initiated, organized and carried out, bear in mind, in less than two years—is that our industries are no longer confronting a dye shortage, and no longer need to anticipate radical changes of styles because of a scarcity of colors.

At first our dyestuff makers naturally followed the line of least resistance and commenced to make those colors which could be made the most easily and for which there was the largest bulk demand, and for which also, the intermediates were the most readily available; these, naturally, were the blues, blacks and browns. Gradually, however, the lines have been extended, and other intermediates have become available, until today practically all of the primary and secondary colors are being made in American factories, that is to say, the blues, yellows, reds, blacks, browns, greens, oranges and violets. From combinations of these practically an unlimited variety of shades may be obtained, and it might be said that the only colors which have not been tackled as yet, are the specially fancy shades which are called for only in limited quantities and which are used by special industries.

And now a word concerning the fastness and quality of American dyes, two points on which there has been, and still is, widespread misunderstanding and misinformation in the mind of the public.

The quality of the domestic colors so far produced has been very gratifying. In point of strength and coloring value the dyes have, with few exceptions, proved to be fully equal to the imported material.

As regards fastness, a somewhat peculiar condition exists. A widespread propaganda has been insidiously conducted, undoubtedly by interests allied to, or in sympathy with, the foreign manufacturers of dyestuffs, having for its object the education of the American public into the belief that American dyes cannot be depended upon in point of fastness. Several of the clothing manufacturing associations have sent out circulars to their trade stating that the colors in their goods, in the absence of the usual supply of dyes, cannot be guaranteed, and the result of this short-sighted and unpatriotic action has been the dissemination of a belief in the minds of the general public, that no dyes are fast except German dyes. It will be many years before the full effect of this doctrine can be eradicated, and the average housewife buying goods over the counter will inevitably give the preference hereafter to foreign goods rather than American, thinking that the colors are faster in the former.

As a matter of fact this question of fastness is purely a relative one. Some dyes are fast to one thing, and not fast to others; some are fast to light, but not fast to washing. Some are fast to washing, but not fast to light or weather. There is no such thing as an absolutely fast dye, fast to all conditions and tests The newly made American dyes are fast, class against class, as the German dyes, but it is unfair and misleading to expect one of the new direct colors to be as fast, for instance, as one of the indanthrenes, or an acid color to be used as fast as one of the fast chrome colors. A similar direct or acid color of German manufacture would be no more fast against such a comparative test than the American colors.

It is not generally known that even the German colors as sold for many years before the war carried the legend on the containing packages "Sold without guarantee." If this fact were more generally known by the general public in this country, the doctrine of "fugitive American "colors" would have short shrift.

The daily press of this country is unquestionably largely to blame for the dissemination of this idea; it is through the daily press that public impressions and opinions are formed, and the widespread promulgation of this teaching, as one of the limitations which have been imposed on the United States as one of the effects of the European war, has made good "copy" and has been exploited to the full. I know from my own experience, that many of the daily papers are not as ready to feature corrections of this belief sent to them by those in a position to know the facts, as they are to publish the unthinking or even deliberately insidious reports to the contrary.

Having outlined the establishment and accomplished work of the new industry, it will undoubtedly be clear to everyone here that the industry can never be retained and developed without well considered and liberal Government assistance in the matter of a protective tariff.

For many years there was an ad valorem duty on imports of dyestuffs of 30 per cent. This was never quite enough to encourage the widespread investment of American capital in the industry, and as I have shown, its growth was slow, if not entirely at a standstill. Last year even our present administration realized the necessity of increased protection, and after an exhaustive hearing, a further degree of protection was rather reluctantly accorded, and today the rate of duty stands at 30 per cent ad valorem and a specific duty of 5 cents per pound on dyes, and 15 per cent ad valorem, and a specific duty of 2½ cents per pound on "crudes" or intermediates. This is much better than the old scale of 30 per cent ad valorem, but it is questionable whether even this is sufficient to protect the new undertaking against the efforts which will be made by the German dyestuff houses to recover their lost ground after the war.

The foreign effort would unquestionably be in the direction of flooding the American market with the cheaper blues, blacks, and browns—the standard colors to which our manufacturers are devoting their first and principal attention—at prices which would make competition impossible, while securing their profit on the more expensive colors which our manufacturers do not make.

For this reason an increase of the specific duty, that is a duty of so much per pound, is much more desirable than an increase of the ad valorem duty, that is, an as-

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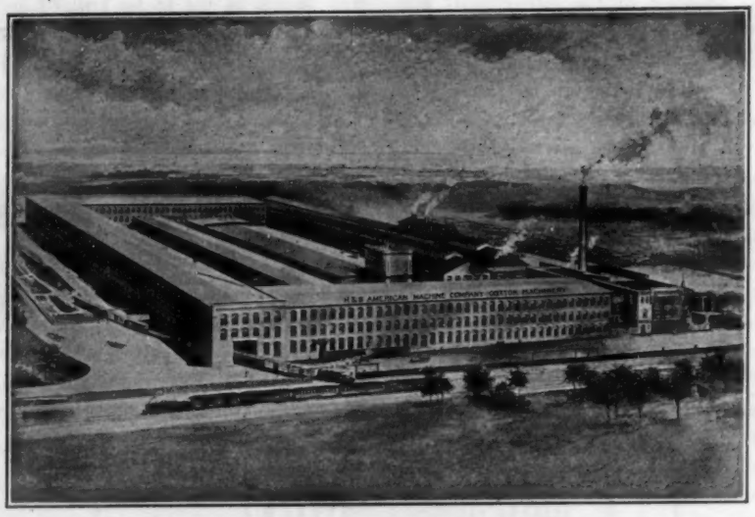

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sessment of impost according to value. The latter bears most heavily on the more expensive and less used colors, while the former bearing most heavily on the cheaper and most largely used colors, would protect the industry against attempts to recapture this market by undervaluation.

Another important feature of the industry which must receive immediate attention is the standardization of American colors. At present each manufacturer, if he has any standard at all, has his own, and the strength of one man's product bears no relation to another's, and it is almost impossible to gauge the value of a color by the price. There are as many types of sulphur black, for instance, as there are manufacturers making it. One concern makes a 5 per cent color, another a 6 per cent or 7 per cent or even 8 per cent color. But against what standard are these percentages estimated? Upon investigation we find that practically each laboratory and chemist has a standard of its or his own, and generally these are from some supply which was available before the war, and usually of German origin.

If America is to make a permanent thing of its dyestuff industry, it must establish its own standards. How this can be done is receiving careful consideration at the present time from the various interests concerned.

My own idea is that it can be most fairly and effectively managed by the dyestuff manufacturers themselves. I suggest the calling of a conference of the dyestuff manufacturers at which the fundamental principles of this question could be discussed and settled, and at which a permanent board of expert color chemists and manufacturers could be appointed, which could act as a bureau of standards, and which could authoritatively standardize new colors as they were produced. Such a board would necessarily have a well equipped laboratory at its disposal, with a sufficient staff of chemists, supported by the trade at large, and by such fees as it might properly collect for work done for its members.

I doubt if any permanent satisfaction could be obtained from a government bureau of standards, as has been proposed.

I should suggest as a means of establishing a ratio between standards agreed upon, and the price at which goods should be sold, that the selling price should be per unit of color value. Then, no matter whether the dye was sold as a concentrated powder, or as a paste containing 75 per cent of moisture; no matter to what extent the color might be "salted," or otherwise adulterated, its relative value as against the standard would be fixed, and it would be equally fair and effective for one manufacturer as for another.

A permanent board, such as I have outlined, could properly fufill other functions besides that of standardizing colors; it could be the means of defending the standards so established. It could serve as a board of arbitration in all matters of dispute involving the question of quality, or correspondence of deliveries to sample. Prompt and expert decisions on such matters would not only save time and endless expense in litigation, which under the legal rules of evidence no laymen can hope to understand, and which seem designed rather to conceal facts than to bring them out, but would relieve the congestion

of court dockets which are, in all industrial centers, choked with cases of dispute as to quality of dyes. I have seen it stated somewhere that there are over 3,000 such cases in the New York courts alone, all the result of the last two years feverish conditions in the dyestuff market, and all awaiting their turn on a docket which has swamped clerks and courts alike, for decision.

This involves also the question of the integrity of contracts, where questions of quality have been raised. So far, in the continued absence of strongly competitive conditions, these contracts have been lived up to fairly well. but as new firms come into the market, as methods of manufacture are improved, and prices are reduced, there is a growing tendency on the part of the buyers to demand protection against a falling market, that is, to require a guarantee that if the market price of a commodity is reduced they shall be accorded the advantage of such a reduction, no matter what price they have contracted to pay. When the war ends, and conditions of sanity are restored to the world, and when the tides of commerce again flow unobstructedly, through the ordinary channels of supply and demand, human nature would have lost one of its most universal characteristics if there were no attempts to avoid the pressure of contracts which had ceased to be bargains but had become burdens.

If, when these conditions confront us, we had an impartial expert to which such questions of contract could be referred by the mutual consent of the disputing parties, when such dispute involved the question of quality as against standard, and this is the ground on which 90 per cent of contract repudiations will rest, the trade would know that decision could be reached intelligently and promptly, and without the interminable delays of the law.

In closing, let me say a word about the possibilities of a permanent trade in the exportation of American dyestuffs. During the past two years, very substantial shipments of American dyes have been made to Brazil, Argentine, Chili, India, Japan, Russia, Spain, Italy and even to England. It would be idle to pretend that this foreign trade originated in anything but an insistent demand for the goods and an inability to procure them elsewhere. The question is, having introduced our goods to these foreign customers, will the world conditions be such that we can hold a portion at least of the trade so initiated. I am inclinded to think that we can. While Germany must be accorded the palm for patient research and technical ability, the United States probably leads, and will more and more lead, in the matter of chemical machinery. The perfecting of this branch of the industry will go far towards offsetting the cheaper labor costs. Furthermore, labor in Europe, when the war ends, is not going to be cheap for many years to come. It will be years before normal conditions are restored.

England is making no provision to manufacture dyes for the world, or to do much more than supply the needs of her own factories, and the one great English color factory, British Dyes Ltd., practically a government-owned concern, is devoting itself exclusively to the requirements of those factories which are manufacturing goods for, or allied to, the military requirements of the government. In other words, like all British industry at the present time, it is concentrating on the war without much thought of future markets, and will continue to do so until the questions at issue are settled.

The only nation from whom we are likely to meet with serious competition for some years to come, in the manufacturing of dyestuffs, is Japan, and in that enterprising country almost as rapid a development in this industry has taken place as in ours.

The future, then, of the dyestuff industry in this country seems to me to be full of hope and promise. If we accept our opportunity, and devolop our resources with intelligence and wisdom both in legislation and in manufacturing methods, there is no reason why America and not Germany, should not be the intermediate and dyestuff center of the world.

National Aniline and Chemical Co., Inc.

The amalgamation of the coal-tar colors, intermediate and raw material manufacturing concerns, comprising Schoellkopf Aniline & Chemical Works, Inc., W. Beckers Aniline & Chemical Works, Inc., National Aniline & Chemical Co., Benzol Products Co., and certain plants and properties of the General Chemical Co., The Barrett Co., and the Semet-Solvay Co., which pertain to this line, has now been accomplished, and it is announced that the new company known as the National Aniline & Chemical Co., Inc., will now continue the business under one organization.

The officers of the company are as follows: Wm. H. Nichols, chairman of the board; J. F. Schoellkopf, president; W. Beckers, first vice-president; I. F. Stone, second vice president and treasurer; C. P. Hugo Schoellkopf, third vice president, Wm. T. Miller, secretary.

The directors of the company are as follows: J. F. Schoellkopf, of the Shoellkopf Aniline & Chemical Works, Inc.,; J. F. Schoellkopf, Jr., of the Schoellkopf Aniline & Chemical Works, Inc.; C. P. Hugo Schoellkopf, of the Schoellkopf Aniline & Chemical Works, Inc.; W. Beckers, of the W. Beckers Aniline & Chemical Works, Inc.; Eugene Meyer, Jr., of the W. Beckers Aniline & Chemical Works, Inc.; Chas. J. Thurnauer, of the W. Beckers Aniline & Chemical Works Inc.; I. F. Stone, of the National Aniline & Chemical Co., Wm. H. Nichols, of the General Chemical Co.; Henry Wigglesworth, of the General Chemical Co. and Benzol Products Co.; J. M. Goetchius, of the General Chemical Co. and Benzol Products Co.; T. M. Rianhard, of the Barrett Company and Benzol Products Co.; W. N. McIlravy, of the Barrett Company and Benzol Products Co.; H. H. S. Handy, of the Semet-Solvay Co. and Benzol Products Co.; E. L. Pierce, of the Semet-Solvay Co. and Benzol Products Co.

The object of the new company is to insure the national independence of the United States in the coal-tar products industry and the aim of the management is to manufacture coal tar dyes and intermediates which can compete successfully, both in quality and variety, with those heretofore imported.

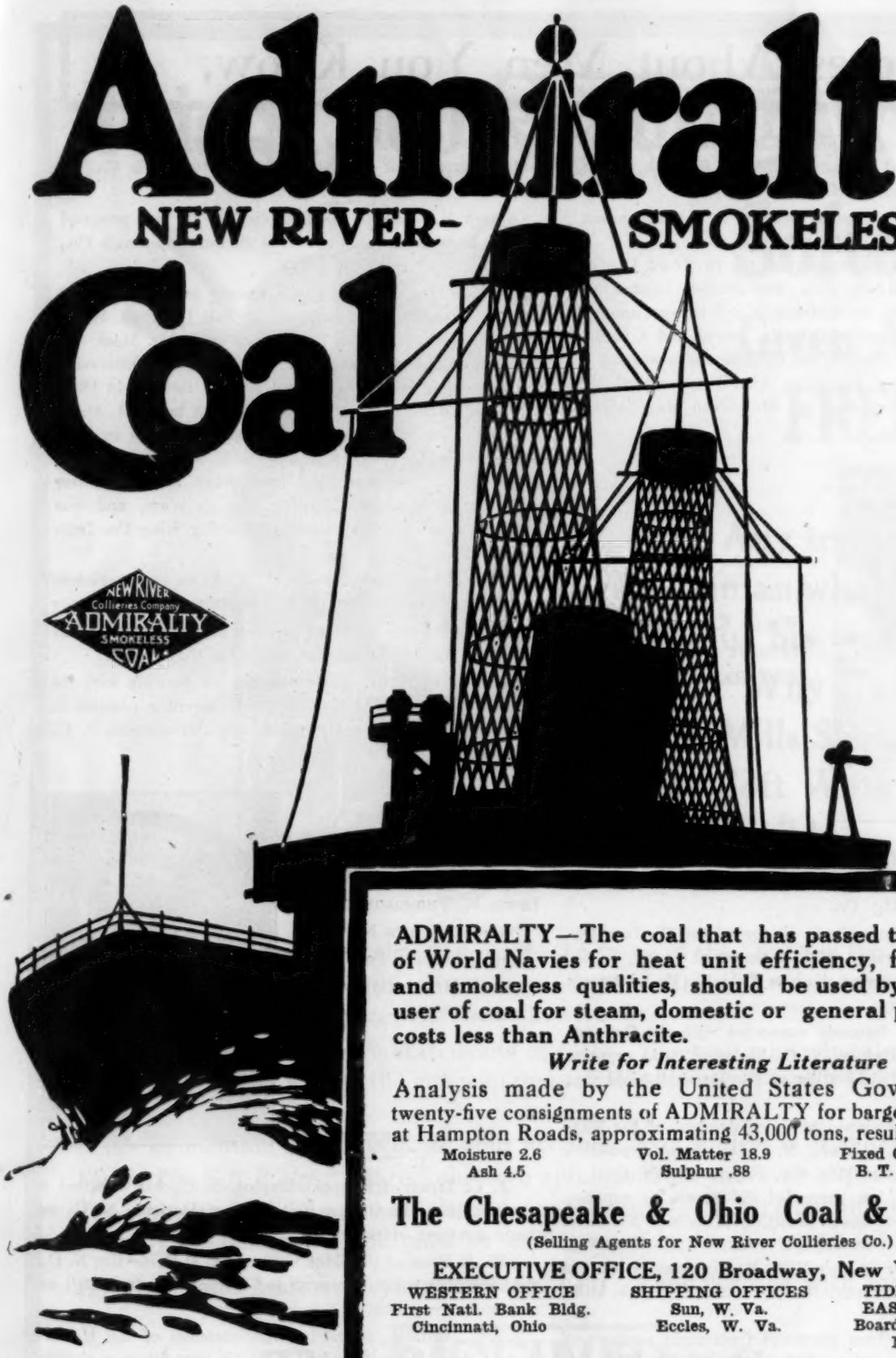
As the constituent units of the new company include manufacturers of raw materials, of intermediates, and of coal-tar dyes, the National Aniline & Chemical Company, Inc., in one organization covers the industry from raw material to finished product.

The offices of the company are at 244 Madison Avenue (corner 38th Street), New York City.

Admiralty

NEW RIVER- SMOKELESS

Coal



ADMIRALTY—The coal that has passed the rigid tests of World Navies for heat unit efficiency, free burning, and smokeless qualities, should be used by every large user of coal for steam, domestic or general purposes It costs less than Anthracite.

Write for Interesting Literature

Analysis made by the United States Government of twenty-five consignments of ADMIRALTY for barges and steamers at Hampton Roads, approximating 43,000 tons, resulted as follows:

Moisture 2.6	Vol. Matter 18.9	Fixed Carbon 76.5
Ash 4.5	Sulphur .88	B. T. U. 14,921

The Chesapeake & Ohio Coal & Coke Co.

(Selling Agents for New River Collieries Co.)

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Notes About Men You Know.

LEE MYERS, overseer of spinning at the Wennonah Cotton Mills, has accepted a position with the Dacotah Cotton Cotton Mills at Lexington, N. C.

J. W. JONES has accepted position as superintendent of the Cardinal Mill at West Point, Miss.

HENRY W. NICHOLS, principal of the Bradford Durfee Textile School, Fall River, Mass., was severely injured recently, being struck by an automobile and thrown against an electric car. He received a scalp wound and a severe shaking up. He was taken to the hospital for treatment.

CHAS. M. STOY, of Anniston, Ala., has accepted the position of superintendent of the Hutcheson Manufacturing Co., Banning, Ga.

WILLIAM KEIGHLEY, THE WELL KNOWN SUPERINTENDENT OF THE BERRYTON (GA.) COTTON MILLS.

C. L. NELSON of Dunean Mills, Greenville, S. C., has accepted the position of overseer of carding at the Fountain Inn (S. C.) Mfg. Co.

W. R. LYNCH, formerly in charge of the Welfare Department of the Marshall Field interests at Spray, N. C., has been made manager of the new Fieldale (Va.) interests of the same company.

DAVID LINDSAY, formerly connected with the German-American Mills at Draper, N. C., has been made superintendent of the new Field Mills of the Marshall-Field Co., at Fieldale, Va.

F. J. LACY has resigned as superintendent of the Ranford Knitting Mills, Hickory, N. C., to accept a position with the Holt-Williams Mfg. Co., Fayetteville, N. C.

R. L. BOTWELL has succeeded Ed Steere as superintendent of the Chattanooga Knitting Mills and Mathis & Davis Company at Chattanooga, Tenn.

W. E. Morton of Steele's Mills, Rockingham, N. C., has accepted position as superintendent of the Hopedale Mills, Burlington, N. C.

T. E. Lentz has been promoted from night overseer of weaving to night superintendent of the Hillside Mills, LaGrange, Ga.

J. E. RAINEY has resigned as overseer of carding at the Hillside Mills, LaGrange, Ga., and returned to his former position as overseer of carding at the Bibb Mill, Porterdale, Ga.

HARROLD H. YOUNT, of Raleigh, N. C., has been appointed secretary of the Bloomfield Cotton Mills Co., to succeed his father, H. A. Yount.

GEORGE K. TATE of Kannapolis, N. C., has accepted position as superintendent of the Saxony Spinning Co., Lincolnton, N. C.

THOMAS HENRY MEEK, well known in southern mill circles, died suddenly on June 7th at East Douglass, Mass., of heart disease. He was 77 years of age. Mr. Meek was born in Fiskkill-on-the-Hudson. He went to Whitinsville when a boy and became a resident of East Douglas in 1864. He was a charter member of East Douglas lodge, A. O. U. W. Mr. Meek was a member of the legislature in 1871 and again in 1898, and had served in all the important town offices. He was head bookkeeper and paymaster for Douglas Ax Manufacturing Co. 35 years, and was traveling agent for Whittinsville Spinning Ring Co. from 1900 to 1912.

W. T. ADAMS has succeeded J. V. Ables as superintendent of the Westminister (S. C.) Knitting Mills.

JESS DAVIS has accepted position as superintendent of the Atlas Manufacturing Co., Bessemer City, N. C.

THOMAS B. HUDGINS has resigned his position with the Union-Buffalo Mills, Union, S. C., to accept a position in the office of the Victor-Monaghan Mills, Greenville, S. C., as assistant treasurer.

LEWIS W. THOMASON, OF THE NEW YORK AND NEW JERSEY LUBRICANT CO., WEARING HIS CONVENTION SMILE.

J. C. TIDDY of Roanoke Rapids, N. C., has accepted a position with the Galden Belt Mills at Durham, N. C., as night overseer of carding.

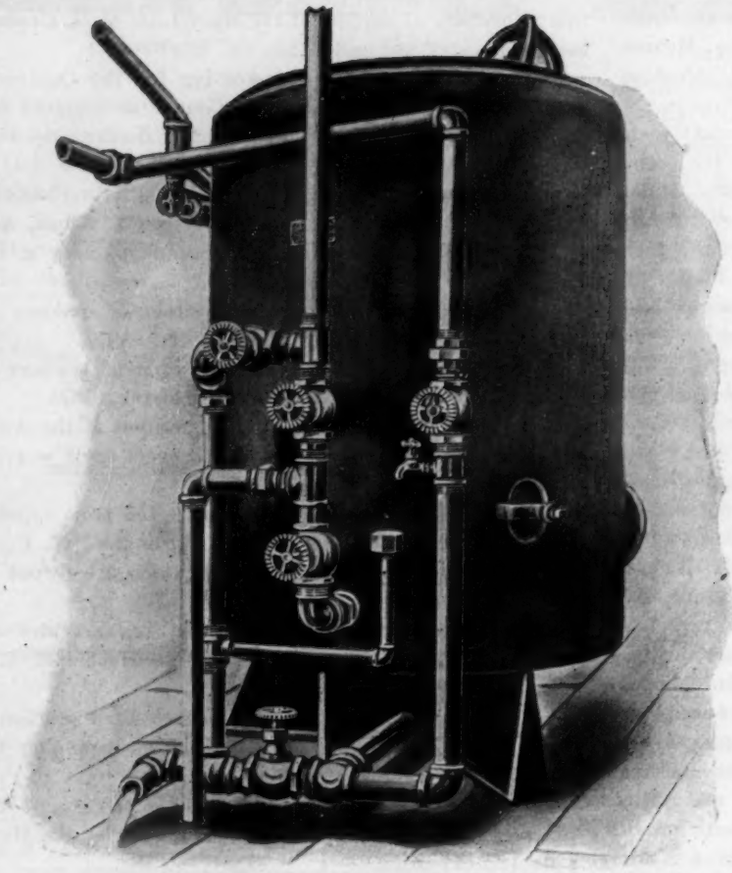
W. E. POAG of the Edna Cotton Mill at Reidsville, N. C., has accepted a position with the Durham Hosiery Mill as overseer of carding.

J. C. WILSON, formerly superintendent of the Hermitage Cotton Mills, Camden, S. C., is now filling a similar position with the Osage Mills, Bessemer City, N. C.

J. H. COGGINS has been promoted to night superintendent of the Dixie Mills, Mooresville, N. C.

W. M. WILLIAMS has accepted position as superintendent of the E. M. Holt Plaid Mills, Burlington, N. C.

This $1,000 REFINITE Water Softener Given Away FREE!



Any textile mill man who will send us his views on "Why Textile Mills Should Use Soft Water" is eligible

We are preparing our catalog and desire the views of the "boys on the firing line." The best article will go into our catalog and the writer will receive the One Thousand Dollar REFINITE Water Softener shown above.

We want plain, every day statements of facts. The man who wins this REFINITE Softener Softener will be the one who presents the strongest reasons in the plainest language.

Make no mention of REFINITE in your article. Your subject is *Why Textile Mills Should Use Soft Water.* State your own opinions from your own experiences.

The winner will be announced in this paper September 15. All communications must be in by September 1st and must be accompanied by the following information:

(1) Name and Address of your company. (2) Your position with company.

The REFINITE Co.

REGISTERED U.S. PATENT OFFICE TRADE MARK

Des Moines, Iowa

T. R. MORTON, who recently resigned as superintendent of the Edenton (N. C.) Cotton Mills, has accepted position as night superintendent of the Bibb Manufacturing Co., at Porterdale, Ga.

C. C. SHANER has succeeded John O. Dills as superintendent of the Nick-a-Jack Hosiery Mills at Chattanooga, Tenn.

JOHN R. RAMSAY, the new southern representative of the Monroe Calculating Machine Company, Orange N. J., for several years represented the company at Boston, Mass., and was more recently in charge of their Worcester, Mass., office. He has now been appointed as their district manager, with general offices at 2115 Healey Building, Atlanta. The territory under Mr. Ramsay's jurisdiction includes the states of North and South Carolina, Georgia, Alabama, Florida and Eastern Tennessee. Other offices tributary to Atlanta are maintained at Birmingham, Ala., and Charlotte, N. C., in charge of G. D. Pollock and J. W. Justus, respectively. Mr. Ramsay comes to the South thoroughly schooled in the application of calculating machines to accounting and is especially well qualified from his past experience, to point out the many "short-cuts" that are possible on the Monroe calculating adding machine. The Monroe is not new to the south. The late D. A. Henning, Jr., Mr. Ramsay's predecessor, had built up a large and satisfied clientele for this "figure wizard" and the list of firms now using Monroes include a great many of the south's leading industries Mr. Ramsay's efforts will be directed toward a continuance of the policy outlined by the late Mr. Henning, which in substance is that the Monroe Company is selling not mere machines but service, and that whatever favor has been gained in the south or elsewhere has been due for the most part to an adherence to this important principle of business.

C. H. BACON, treasurer of the Loudon (Tenn.) Hosiery Mills, has succeeded R. H. Bell as president of that company.

JOHN L. ROUNTREE, superintendent of the Barker Mills, Mobile, Ala., was an Atlanta visitor recently.

M. G. STRICKLAND has succeeded C. B. Maxfield as superintendent of the Bowling-Emory Knitting Company, Durham, N. C.

Otis W. Smith has resigned as overseer of spinning at the Newnan (Ga.) Mills No. 1 and accepted a similar position at the Swift Mfg. Co., Columbus, Ga.

J. P. HUGHES has resigned as overseer of No. 1 weaving at the Clinton (S. C.) Mills and accepted a similar position at night at the Hillside Mills, LaGrange, Ga.

W. LOEBER LANDAU, Manager of the MaGinnis Cotton Mills at New Orleans and President of the Kohlmann Cotton Mill & Mfg. Co., Inc., of the same city, was visiting Charlotte and Greensboro, N. C., on a business trip during the past month.

E. W. HOPPER has resigned as overseer of spinning at Millen, Ga., to become assistant superintendent at the Maple Mills, Dillon, S. C.

J. B. BISHOP has accepted the position of overseer of weaving at the Gambrill Mills, Bessemer City, N. C.

W. L. BOYD has accepted the position of overseer of spinning at the Chadwick-Hoskins Mill No. 1, Charlotte, N. C.

C. H. GOODROE of Cedartown, Ga., has accepted position as overseer of carding at the Mary-Leila Mills, Greensboro, Ga.

T. J. HONAN, overseer of weaving for the Quidnick-Windham Mfg. Co., Willimantic, Conn., has resigned his position with the company to accept a similar one with the Nottingham Mills, Providence, R. I.

B. M. NEWSOM has been promoted from second hand to overseer of spinning at the Raybell Mfg. Co., Selma, Ala.

M. G. EWING has become overseer of spinning at the Sevier Mills, Kings Mountain, N. C.

LIN SHARP has accepted the position of overseer of spinning at night at the Huntsville (Ala.) Mills.

PERCY WOOD has accepted the position of overseer of night carding at the Hillside Mills, LaGrange, Ga.

G. E. MCGUIRE has resigned his position at the Addison Mills, Edgefield, S. C., to become overseer of weaving at the Wallace Mills, Jonesville, S. C.

JOHN L. ROBINSON has been transferred from superintendent of the Hopedale Mills at Burlington, N. C., to superintendent of the Ossipee Mills which are owned by the same company.

ZACHARY GOWAN, of Griffin, Ga., has accepted the position of overseer of spinning at the Henderson Mfg. Co., Hampton, Ga.

J. C. BROWN of Atlanta, Ga., has accepted position as second hand in spinning at the Thatcher Spinning Co., Chattanooga, Tenn.

CHAS. J. TRIPPE, formerly of McColl, S. C., is now overseer of spinning, spooling and warping at the Hartsville (S. C.) Mills.

J. R. HUNT has resigned as second hand in carding at the Thomaston (Ga.) Mills and accepted the position of overseer of carding at the Milstead (Ga.) Mfg. Co.

P. A. SMITH of Porterdale, Ga., has accepted position as overseer of spinning in Mill No. 1 of the Fulton Bag & Cotton Mills, Atlanta, Ga.

WM. R. OWEN, second hand at the Judson Mills, Greenville, S. C., has resigned to become overseer of carding at the Aldora Mill, Barnesville, Ga.

A. M. BURT has resigned his position with the Southern office of A. Klipstein & Company and has accepted a position with the Richmond Hosiery Mills, Rossville, Ga., this change taking effect July 1st

W. R. SMITH, formerly overseer of the dying department of the Caraleigh Mills at Raleigh, N. C., has accepted a position with the Southern office of A. Klipstein & Company located at Charlotte, and will cover the territory principally in North Carolina and Tennessee in the interest of this company.

C. A. SWEET, who is well known throughout the mill industry of the South, became connected with the Charlotte office of A. Klipstein & Company under Paul F. Haddock, the Southern manager on July 1st. Mr. Sweet will travel for the Klipstein Company principally in Georgia and Alabama.

How Other Men Manage

Practical Discussions by Cotton's Readers on all varieties of Mill Subjects

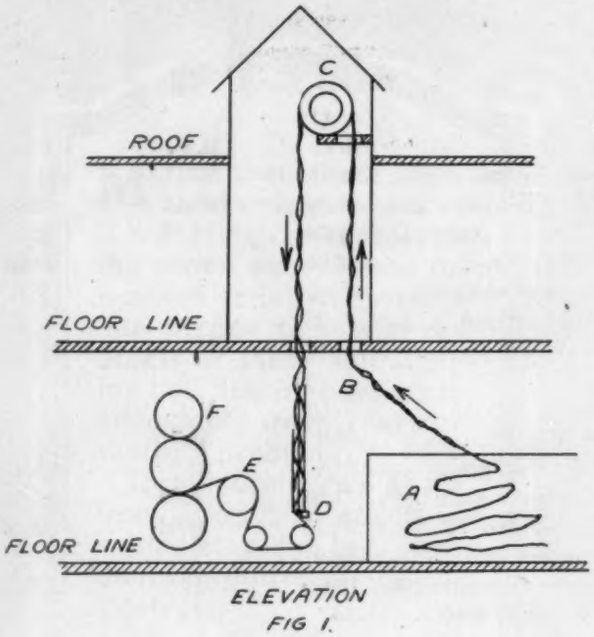
Answers "Student Reader."

EDITOR COTTON:

Replying to "Student Reader" in the June number:

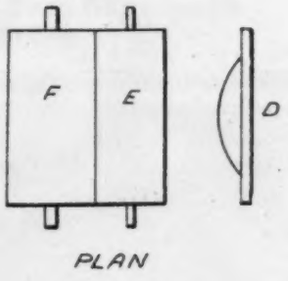
(1.) What is the best way to open wet goods onto a watermangle, without using a scutcher? Speed to be about 40 to 50 yards per minute. Would appreciate it if you could show a diagram giving the arrangement of the run.

In the diagram herewith shown (A) is the finished bin



ELEVATION

FIG 1.



PLAN

FIG 2

of bleached cloth. The cloth, as indicated by the arrows, passes in the rope form through the poteye in the opening in the upper floor at B, through the tower which passes through the upper floor and roof as shown, through a poteye and over a reel at C then down to the hard wood half moon D where the operatives open it out by hand over the half moon previously mentioned then round the two small rollers in the bottom of the water box, then over the expanding stretcher E and through the nips of the three roll mangle F, where it may be either batched up on to rolls or plaited down into a truck.

We have not shown any frame or water box to mangle, this to simplify matters.

(2.) What amount of bleaching liquor at 2° Twaddel is generally figured on to bleach 100 pounds of cotton cloth weighing about 5.00 yards to the pound?

It is not possible to answer this question definitely along this line, because, the amount of chlorine, i.e. the available chlorine, which is the bleaching agent in bleaching liquor may, and does, vary considerably in bleaching at 2° Twaddel, and for this reason, the Twaddel hydrometer is not a reliable test for its bleaching strength. Then again the quantity of bleaching liquor necessary to bleach 100 pounds of cotton does not depend so much on the strength of the bleaching liquor as it depends on the preparatory processes which the goods have gone through previous to the bleaching processes. If the goods have been thoroughly boiled and cleansed it is possible to bleach 100 pounds of cloth with 2½ gallons of bleaching liquor at 2°, but if the goods are imperfectly bottomed it may take 30 gallons or more.

Some years ago the writer was manager of a print works in Moscow, Russia. We used the Barlow high pressure kiers in our bleachhouse and our goods, which were for madder dying and required a more thorough bottoming than any other style of goods, were steeped over night, then run into the kier and boiled at 45 pounds steam pressure for 12 hours, then washed out of kier and soured at 2° Tw., then washed back into the kier and boiled for 10 hours at 45 pounds pressure in 350 pounds soda ash and 175 pounds of rosin (for 10 tons of goods) and washed from this and soured and washed up into the finished bins. These goods were so thoroughly bottomed with the two boils, that they came from the ash and resin boil a perfect white and required no chemicking at all. I was taking lots of chances in doing this of blowing up the kiers, but we did it, and took the gold medal at the Paris Exposition for our goods which paid us for our risk. The following tests or experiments, which are on record, will illustrate the difference in obtainable results on the same goods, and at the same time serve to show the impossibility of stating definitely the number of gallons of any given strength of bleaching liquor required for any 100 pounds of goods:

Sixty-six grams of a stove dry sample of cotton cloth were placed in 500 CC of water and heated for 2 hours in 3 per cent of soda ash and one per cent of soap, the temperature being about 180 degrees. The sample was then removed and after being well washed, the boiling was repeated in fresh liquor of the same strength, using however turkey red oil in place of soap. It was again washed thoroughly and put into a solution of bleaching liquor for four hours and bleached. It was found that it had required 2.87 grams of chlorine to accomplish this result. A similar piece of cloth, lime boiled and lye boiled (as given previously for

a madder bleach) required only 0.55 grams of chlorine to bleach it. So that to bleach by the one boil soap and soda quick process that is so fashionable at present among scientific managers, and textile school bleachers, would require more than five times the amount of bleaching powder than the regular method requires, and, since bleaching powder is the most expensive chemical the bleacher uses, the economical comparison is obvious. Good boiling (twice) is the cheapest way of getting a good bleach, and the only way of getting a *good white,* and the number of gallons of bleaching liquor at 2 degrees Tw. required to bleach 100 pounds of cotton cloth *white,* depends entirely upon it.

We might say in passing, that in common practice it takes on an average about 2½ pounds of bleaching powder to bleach 100 pounds of cotton cloth. We would also say further that a bleaching liquor standing at 2 degrees Tw. contains normally 6 grams of available chlorine per litre or 27.710 grams per gallon × 3 = 68.130 grams of bleaching powder per gallon therefore,

$$\frac{2.50 \times 453.603}{68.130} = 16.64 \text{ gallons of}$$

bleaching liquor required theoretically, but to cover all contingencies say 20 gallons.

It must not be understood that we mean that 16.64 or 20 or 2½ gallons of liquor are sufficient to cover and bleach 100 pounds of cloth, but that it would take the equivalent value of these quantities of bleaching liquor at 2 degree Tw. to do it.

W. B. Nanson.

Comparative Strength of Yarns.

EDITOR COTTON:

Many men engaged in the cotton mill business would like to do certain things "if they only had time." They are so busy with immediate problems demanding their time and attention that they have no time for any experiments in their mill.

A mill agent asked me last year, "Is it practicable to comb 1 inch cotton?" I assured him that it was, and to prove the statement I have made the following tests. The staple of the cotton was 15/16 inch and graded Strict Middling; the same cotton being used for all three yarns. The main object of the test was to compare the different breaking strengths from single-carded, double-carded and combed stocks.

Three different size yarns were spun from the same roving and the breaking strengths of the yarn recorded. The tests were made on a hand tester and as each yarn was tested in the same manner the results are comparative. An interesting incident developed where one bobbin consistently broke about 10 pounds lower than the average. On tracing out the cause of this weakness it was found that the bobbin was not a good fit on the spindle. The tests from this bobbin were discarded. I mention this to show what will sometimes happen even in the most carefully prepared tests.

The general theory is that short drafts are preferable to long drafts; the shorter draft giving a more uniform yarn and hence a stronger yarn. Why the yarns made with a draft of 14 should break better than yarns made with a draft of 10 I could not find out but the results show up that way. The draft of 17 certainly showed that we had gone far enough in drafting and in size of yarn.

No. 34 yarn spun with a draft of 17 and from 15/16 inch cotton is not a bad performance. This yarn was spun on a 1¾ inch ring, and solid top rolls.

In making a comparison of the relative cleanliness of the three yarns, there is a noticeable difference in each. I submit in table form the results of the tests. These tables represent an average of a large number of tests on each yarn. With moderate drafts an increase of 10 to 12 per cent in breaking strength can be obtained by giving the stock a second process of carding. By combing we eliminate the short fibres in the stock which allows the long fiber to be retained, showing in the yarn by an increase over single carded of from 31 to 35 per cent. This latter result should prove that it is practical to comb 1 inch cotton.

The tables follow:

COMPARISON OF SINGLE-CARDED, DOUBLE-CARDED AND COMBED YARNS.

(1)

	S. C.	D. C.	C.
Break in lbs.	66.13	77.41	104.83
Weight in grains	42.26	44.18	49.33
Pounds per grain	1.56	1.75	2.12
Average No.	23.64	22.62	20.28
Comparative strength	100%	112%	135%
Twist per inch	22		
Mechanical draft	10		

(2)

	S. C.	D. C.	C.
Break in lbs.	51.9	58.7	77.7
Weight in grains	31.5	32.2	35.4
Pounds per grain	1.66	1.82	2.16
Average No.	31.75	31.06	28.25
Twist per inch	24.9		
Comparative strength	100%	110%	131%
Mechanical draft	14.		

(3)

	S. C.	D. C.	C.
Break in lbs.	39.1	38.2	46.4
Weight in grains	29.3	28.5	29.7
Pounds per grain	1.33	1.34	1.56
Average No.	34.13	35.09	33.67
Comparative strength	100%	100%	115%
Mechanical draft	17.		

H. K. Dick. (N. C.)

Textile manufacturers must hold themselves "to strict accountability" in their dealings with customers. There is just as much reason why they should apply the same principle in the management of their shops. Every item used in the production of their goods must be of proven efficiency. The staple supplies of sizings, weighteners, softeners, etc., found in the establishments of the most progressive manufacturers are invariably brands which experience has shown to be the most accountable in the test of usage. The general supplies made especially for the textile trade by The Arabol Mfg. Co., 100 William Street, New York City, can be held to strict accountability by their users.

SKF

BALL BEARING HANGERS

MORE than three thousand satisfied users of S K F Hangers representing almost every line of industrial activity constitute our pledge to you of the fitness of these self-aligning ball bearing hangers to adequately solve your line shafting problem.

Installations ranging from 2 to 1050 Hangers in a single plant bear evidence of power saving advantages.

SKF BALL BEARING CO.
Hartford, Conn.

Green Spots on Black Goods.

EDITOR COTTON:

In response to the query as to the cause of greenish white spots on goods dyed with an oxidized aniline black, the cause and the remedy; also whether such spots would be more likely to appear in winter months than in summer months, and why? The writer has been shown no sample of these spots, but should judge from the discription that they arise from drops of water (notably condensed steam) dripping from ceiling of the ager or other points after padding and before soaping the goods. See that the ceiling of ageing machine is covered everywhere where steam could condense and that the goods are got into the soaping and raising as quickly as possible after ageing. Naturally the condensation and therefore the spots will be greater in cold weather than in hot.

W. B. Nanson.

(In this connection, an interesting case of similar green spots on hosiery was recently brought to our attention. The hose were dyed in a tomtom and hydroextracted, after which they were packed in boxes, carefully covered with cloth and allowed to stand until the next day, when they were removed and placed in the oxidizing room. When removed from the boxes, occasional light greenish-white spots would be found. Careful investigation developed that they were caused in the tomtom. Some bolt holes in the bottom of the tomtom had been plugged to protect the bolts from the liquor and to make the bottom of the tub smooth. Some of these had worked out and when the toms would hit on hose directly over these holes, the goods would be forced into the hole thereby preventing an even saturation and causing a light spot of a size approximating the size of the hole.—The Editor.)

Business Experts.

EDITOR COTTON:

There are many different names used to designate the men who are business experts. They are often called factory economists, efficiency engineers, business experts and various other names. They have two ways of remuneration; in some cases they will go through the plant for a stipulated sum while in other cases they receive an amount per day for the number of days they are at work. Their idea of course, is to make suggestions so that the business will show higher returns.

Regardless of how well a business is being conducted, it is surprising how many points about it can be improved by knowing how other people in the same line do certain things so much cheaper, and in many cases, better.

This is particularly true of the larger establishments. One may think that everything is going to perfection but a person well versed can often find quite a few things where a change would be an improvement. Some other concern in the same line in another part of the country may be using a better system in some part of their factory. Naturally this system may be obtained by going to that factory, if one knows of it. But there may be seven different items of which we should know. If these items are at seven different factories in different parts of the country it might prove very expensive to go to all of them, even were the time available. It is true that the expert might not know of all seven ideas, but the chances are as likely he'd know of them, as that we would hear of them, because that is his business.

These experts are constantly on the lookout for new ideas. As a rule every establishment that they visit gives them something which can be used in others. Also they may see several ways of doing things and can compare them to see which one is doing the best. A mill man might go to some factory at a distance and get a good idea, when if he had gone a little farther he would have gotten a better one. The expert probably knows of both and knows also that the second is far superior to the first. These fellows keep up with all the new things in business and as it is the improved things that keep concerns up to date and in the front ranks they are needed.

"Don't guess—know", should be the motto of a manager who hopes to be successful. A manager. (S. C.)

Increasing the Production.

EDITOR COTTON:

Shortage of labor, brisk business, high wages, are what the manufacturers have got to put up with today, and to all appearances the worst is yet to come. The shortage of labor is due, as we all know, to the prosperous business in other lines, and to try and offset this, the textile manufacturers have been compelled to give big increases in wages.

Then came the order to speed up.

I consider myself a good carder, and like all good carders I do not believe in excessive speeds, but orders are orders and I went about the task of increasing the production.

My pickers more than took care of the cards, so I left them alone, I increased the doffer speed of the cards about two revolutions per minute, and take special note each day that the web is free from neps and not cloudy, any one I see not carding clean I have the grinder reset.

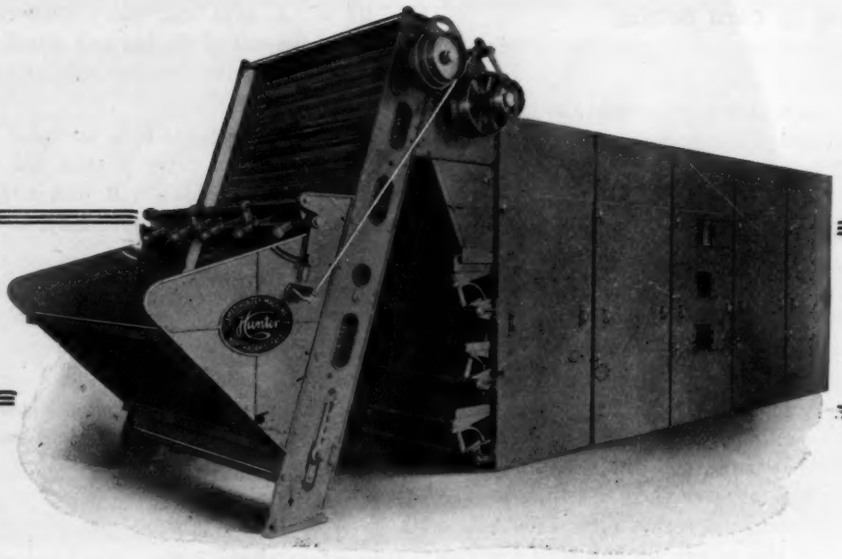
The doublers and ribbon lappers could take care of the card sliver when pushed, so I left them alone, and then came the combers. I have Nasmith patent combers, running a 540 grain lap with a five tooth feed, making a 63 grain sliver; this I changed to a six tooth feed, and with the same draw-box draft I got a 72 grain sliver. The drawing rolls in the draw box being metallic I had to increase the weightage of the two front rolls ten pounds each to get them to draw.

I did all my increased drafting of the sliver on the breaker drawings and it was necessary to speed up the front rolls about 50 revolutions per minute in order to keep up with the combers; the finisher drawings I speeded up just half the amount to get what I desired.

On the slubbers, intermediate and fine frames I was fortunate, having enough spare spindles to take care of the work as it came along, likewise the spinning room could take care of itself. I am getting good results, and with a little more frequent oiling, the machinery is standing the strain.

For one, I would like other carders to give their version on this proposition; perhaps they can tell me how to improve my arrangement, and I am always willing to learn.

H. E. F. (Mass.)



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Write for Bulletin 82.

James Hunter Machine Co.,
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Notes on Card Setting.

EDITOR COTTON:

I enjoyed reading the controversy between Carder (Ga.), R. W. A. (Ala.), and Ted (N. C.), in the January issue of COTTON. I am glad that such a subject was started, as it will surely prove of benefit to many carders.

The discussion brought my thoughts back to the years when I was in charge of carding in a large mill in Fall River, Mass. I had a man in charge of the cards who believed in progressive setting. When I asked why he adopted such a setting, he answered that the few carders he had worked for, thought it was a great thing, and added, they were good carders, too. But when I again asked him to explain how such a setting acted on the stock, he was unable to give a suitable answer, and confessed he did not know. So I advised him to never make a setting on any card unless he could explain the reason for such a setting and at the same time be able to explain how such a setting would improve the work.

Progressive setting was adopted in the woolen and worsted mills because after the raw stock is scoured the fibers have a tendency to curl, and so the first few flats are set away from the cylinder in order to disentangle the curled fibers before they are drawn through the teeth of the flats, otherwise they would be broken. But with cotton it is different, because we seldom find the length of the staple to exceed the distance between the toe of one flat to the toe of another.

The reasoning is the same as the distance between the bite of the licker-in and the feed roll.

If the distance exceeds the length of the staple no injury will result to the staple, no matter how close we set the feed plate. Of course, the feed plate should not be set close enough to touch the licker-in teeth. Now, if the distance of the toe of one flat to another exceeds the length of the staple, how can the staple be injured?

If it is injured at this point, it is injured also between the feed roll and the bite of the licker-in. If I am wrong, I have injured a great amount of cotton for I have set close at both points for the past twenty-five years, and I am still in charge of a fair size job, and well satisfied. Carder (Ga.) and R. W. A. should visit such mills as the Elizabeth Mills, at Charlotte, N. C., and the Kilburn Mills of New Bedford, Mass., and I am sure they would change their minds. The work from these mills are equalled, but not surpassed, and you find no progressive setting there. In the latter mill you will find the flats set to 3/1000 gauge.

If the licker-in is set almost to a touch, the feed will be gradual, and such a setting is the only way to make it gradual.

When the feed is gradual, each flat will do the same amount of work and the doffer receives the same amount of fibers less the foreign matter taken out by the flats. No carder will run a lap heavier than 12 ounces to a yard.

Remember we can extract impurities much better from a small tuft of cotton, the smaller the better.

A light lap and a high speeded doffer is advocated by all card builders; ask any of them!

There is no reason for high and low flats. When cards are in such a condition they should be repaired immediately.

R. W. A. says that many licker-ins do not properly comb out the end of the lap and detach the fibers clean and present them to the cylinder separately or individually as they should.

No, not if the licker-in is set about to a 10/1000 gauge or more, or if the licker-in teeth are in a bad condition, otherwise, the licker-in will detach the stock from the hanging fringe clean and gradually.

The licker-in was adopted so as to remove a certain amount of work from the cylinder and flats. The saw-tooth was also adopted, so the stock would be partly combed and at the same time preclude the possibility of the stock being taken around a second time.

A card can be run without the licker-in and get fairly good work. Remember the days of double carding?

We never had licker-ins on our first stationary cards. The heart of the card is the flats. When they are in poor condition, seeds and other foreign matter may be seen on the surface of the doffer. Am I not right?

R. W. A. says that the main or finishing carding is done at the front of the card and not at the back, as many writers and text books tell us. Will R. W. A. please tell why?

When we set the flats away from the cylinder we reduce the carding surface of the card and the combing efficiency is reduced, and then of course, the main carding is done at the front of the card. But with a carding beater in our finisher picker; with the licker-in set almost to a touch, to the feed plate; and with the distance of the toe of one flat to the toe of another exceeding the length of the staple, how can the stock be injured by setting all the flats at 10/1000 gauge? If the fibers are injured, will R. W. A. or some one please tell us how they are injured and what injured them?

What is the use of arguments when the whole thing can be proven by tests? Set a card as stated in the progressive form, and next set all the flats at 10/1000, obtain a sizing from each and be convinced. With progressive setting, I have found a variation of eleven grains to a yard, while with a setting of 10/1000 gauge at every setting point, I never found a variation of more than five grains to a yard, except of course when a defective place existed in the sheet of lap.

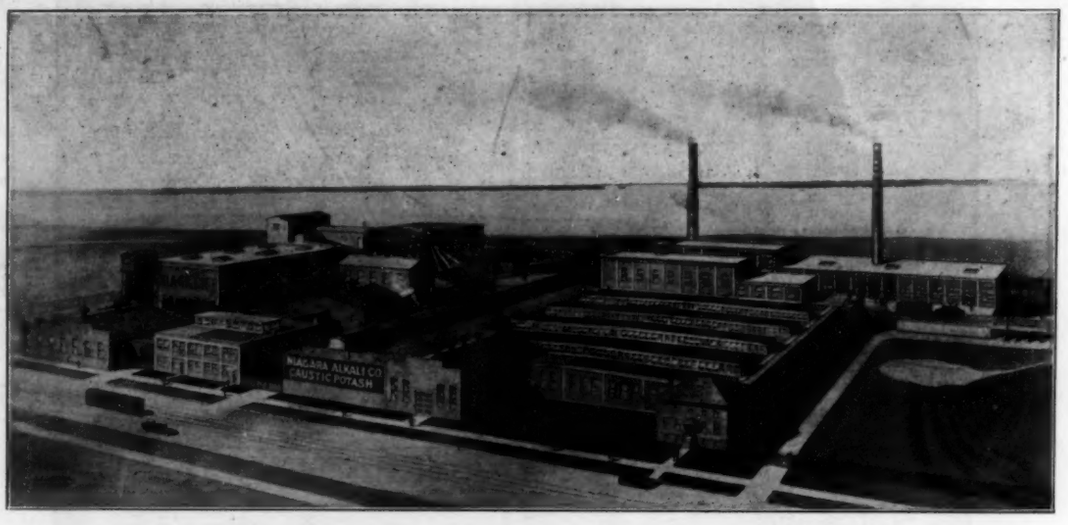
Carder (Ga.) is wrong when he states, "This draft, in my opinion, should circle as much as possible and save blow-outs, and the short fibres blown out in the flats and over the licker-in should circle the cylinder and come out on the card as flat stripping."

The back of every card should be packed as tight as possible, so as to prevent the draught from circling the cylinder, as a draught will draw much impurities that would otherwise drop through the licker-in screen. Cotton of the proper length will follow the cylinder with or without draught.

Wash. (N. H.)

A man never knows what he can do until he tries, and then he is very often sorry that he found out.

There are two reasons why a man does not mind his own business—either he has no business or he has no mind.



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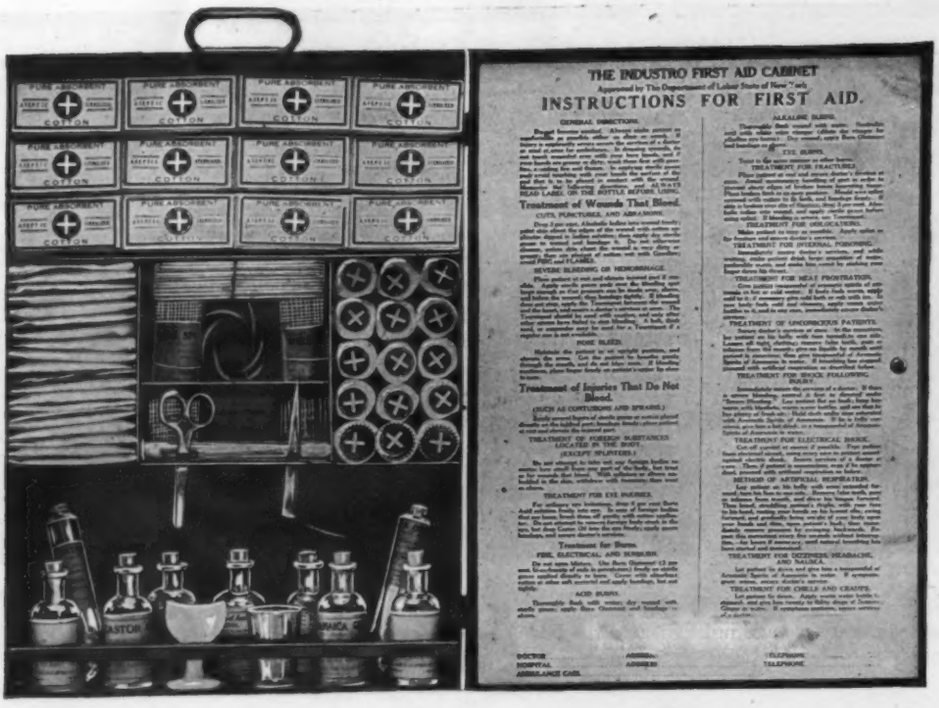
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The Selig First Aid Cabinet which is shown in the illustration, is prepared according to the requirements of the Utica Mutual Compensation Insurance Corporation of Utica, N. Y. It is approved by the New York Department of Labor and many casualty insurance companies of the United States. First aid equipment is also recommended by the Compensation Inspection Rating Board in order to reduce the premium on workmen's compensation insurance.

These compact and convenient first aid cabinets are especially prepared for use in cotton mills, machine shops, mines, railroad and lumber camps, and anywhere else where an efficient first aid to the injured is desired. Full and detailed information may be obtained on application to the Selig Co., Atlanta, Ga.

The S K F Ball Bearing Company of Hartford, Conn., have prepared a number of special bulletins which they are sending to interested people without cost. These special bulletins are as follows: General Ball Bearing Bulletin; Railway Lighting Generators; Ball Bearing Hangers; The Application of Ball Bearings in Textile Machinery; Ball Bearings in Automobile Drives; Ball Bearings in Electric Motors; Ball Bearings in Street Railway Service; Ball Bearings on Paper Making Machinery; and Ball Bearings in Machine Shop Tool and Shop Equipment.

General Electric in New Quarters.

The New York offices of the General Electric Company were moved on June 16 from 30 Church Street to the Equitable building, No. 120 Broadway. The entire twentieth floor of the building has been especially arranged and furnished for the General Electric Company. For nine years these offices have been at No. 30 Church Street where the company located its New York offices when it out-grew the "Edison Building," at No. 44 Broad Street. This building was originally built for the Edison General Electric Company which, in 1892, was combined with the Thomson-Houston Electric Company to form the General Electric Company. In the quarter century since the General Electric Company was formed, its business has increased from about ten millions in gross sales the first year of its organization to gross orders of $167,169,000 during the twenty-fifth year and its sales offices have naturally increased in number and in importance. The company's offices in New York are the largest and most important among its district offices.

The number of looms per weaver and the yards of cloth per loom per annum are of vital importance in these strenuous days. With the large profits available on woven fabrics, mills are interested to keep their looms in operation.

The automatic features of the filling battery enable the Northrop loom to produce more yards of cloth per annum than the common loom. Also the ability of the Northrop loom to be operated at noon and at other times without weavers makes possible an increased product for the mill and increased pay for the weaver not otherwise to be obtained.

The Draper Corporation, Hopedale, Mass., will be glad to go into the details of such increases with any interested person.

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Your Accounting and Financial Problems

BY RALPH H. BUTZ.

There are a number of manufacturers who lease the property in which they conduct their business, and it frequently happens that these manufacturers do not know how to treat the various accounting problems that arise in connection with these leases. When a lease for a certain number of years is acquired for a specified sum of money it is entered upon the books as an asset; but this asset must be written down periodically so that when the lease expires the asset account will have been extinguished. The proper accounting for all lease expenditures may not seem to be important, but if the manufacturer desires to have his statements and balance sheet show accurate information about his business it is necessary that he treat this account in conformity with approved accounting procedure.

The simplest form of lease is that which provides for the payment of a stipulated amount each month as rental for the use of the property. There is no entry for the lease as an asset where the agreement takes this form. The monthly payments for rent are charged directly to the Rent account, and these are the only entries that are made. The Rent account is one of the operating expense accounts and will be absorbed as such through the Profit and Loss account during the periodical closing of the books.

There are, however, other forms of leases, and it is not unusual for the lessor to require that the lessee make a substantial advance payment at the time the lease is signed, such advance payment to be held by the lessor until the last year of the lease for the purpose of protecting himself against any default in payments which the lessee might make. As an illustration of this form of lease we may consider the following as an example:

A manufacturer leases a factory building and plot of ground for a period of ten years. Under the terms of the lease the manufacturer agrees to pay each month the sum of $500 as rental for the property, or a total of $6,000 per annum. However, the lessor further requires that the manufacturer shall deposit with the lessor the sum of six thousand dollars to provide against default in payments. If the manufacturer performs his part of the contract for the first nine years, then the deposit of $6,000 shall be retained by the lessor as payment in full for rent for the last year of the lease, and the lessee is not required to make any further payment after the close of the ninth year.

What entries should the manufacturer make for the transactions occurring under this contract?

From the terms of the agreement it is evident that the lessor has the use of the $6,000 for a period of ten years, and therefore receives the annual interest which this sum earns. This is a condition that is frequently overlooked by the manufacturer when he signs a lease of this nature which stipulates that a deposit or advance payment be made at the time of signing. In a case of this kind the manufacturer should request that the interest earned by such a deposit should apply toward the rental charge each year, instead of allowing the lessor to derive this income in addition to the rent. The annual interest on this amount at 6 per cent is $360, and the manufacturer should therefore be required to pay only $5,640 per annum instead of $6,000.

However, we will now treat the entries as they should be made under the agreement as stated. When the deposit of $6,000 is made the manufacturer makes an entry as follows:

Dr. Prepaid Rent	$6,000	
Cr. Cash		$6,000

Prepaid Rent is an asset account and will be carried on the books as such until the end of the ninth year. During the tenth year this amount will be written down at the rate of $500 per month, in this manner extinguishing the asset at the end of the year.

At the beginning of the first month the manufacturer makes a payment of $500, and makes an entry in the following manner:

Dr. Rent	$500	
Cr. Cash		$500

At first thought it appears that this is the only charge the manufacturer has in connection with the lease. It must not be forgotten, however, that he has taken $6,000 out of his capital for the advance payment, and that this sum would earn interest if employed in his business or invested in securities. It is easily apparent that the manufacturer loses the interest on this sum, and that his rental is increased by this amount, which is, at 6 per cent, $30 per month. An entry to cover this added charge to rent would be,

Dr. Rent	$30	
Cr. Interest Earned		$30

There is no entry for cash received. The interest was earned but not received by the manufacturer, and since it was not received it is a charge to rent account; this being due to the terms of the lease.

The entries to close the Prepaid Rent account during the tenth year will be in the following order:

Dr. Rent	$500	
Cr. Prepaid Rent		$500
Dr. Rent	$27.50	
Cr. Interest Earned		$27.50

These are the entries for the first month. The entries for the second month will be,

Dr. Rent	$500	
Cr. Prepaid Rent		$500
Dr. Rent	$25.00	
Cr. Interest Earned		$25.00

The decrease in the interest charge, every month during the tenth year, is due to the fact that the principal amount in the hands of the lessor is being reduced by $500 each month.

* * * * * *

There is another form of lease in use occasionally, under the terms of which the rental charge for the entire period is paid in advance. A lease of this nature came to my attention recently, the terms of which were as follows:

A manufacturer acquired a lease on a factory building for a period of ten years. He paid $20,000 at the time he acquired this lease, also agreeing to keep the factory building in good condition.

In this instance the lease is an asset which diminishes in value until its expiration. At the end of the first year the lease will have lost one-tenth of its value, and at the end of the fifth year its value will be only one-half of what it was at the time it was acquired.

When this lease was purchased the first entry was:

Dr.	Prepaid Rent	$20,000
Cr.	Cash	$20,000

At the end of the first year the lease will have diminished in value $2,000, and this amount is then written off the asset account in the following manner:

Dr.	Rent	$2,000
Cr.	Prepaid Rent	$2,000

The interest on the amount of prepaid rent should also be included in the rent charge. The manufacturer surrendered $20,000 of his capital upon which he should have earned at least 6 per cent if it had been employed in his business. Therefore there is an interest charge of $1,200 which the rent account should bear for the first year.

Dr.	Rent	$1,200
Cr.	Interest Earned	$1,200

The entries for the second year will be as follows:

Dr.	Rent	$2,000
Cr.	Prepaid Rent	$2,000
Dr.	Rent	$1,080
Cr.	Interest Earned	$1,080

The interest will be reduced by $120 each year, and the first years will have to bear the largest interest burden by this method. This is offset, however, by the fact that the manufacturer is under contract to keep the building in repair, and it is safe to assume that the charges for repairs during the last year of the lease will be large enough to equalize the heavier interest charges during the first years.

The asset account, prepaid rent, will be extinguished at the end of the tenth year if the entries are made in the proper form each year.

Calculations for Knitted Fabrics.

BY WILLIAM DAVIS, M. A.

To complete the examples given on the formula devised regarding the weight, length, etc., of the knitted fabric, the remaining three of the six formulae devised will now be given; these were as follows:

$$(4)\quad \frac{\text{Weight} \times \text{Number} \times \text{Basis}}{\text{Length} \times \text{Width} \times \text{Take-up}} = \text{Courses per inch.}$$

$$(5)\quad \frac{\text{Weight} \times \text{Number} \times \text{Basis}}{\text{Length} \times \text{Courses} \times \text{Take-up}} = \text{Width of fabric.}$$

$$(6)\quad \frac{\text{Weight} \times \text{Number} \times \text{Basis}}{\text{Length} \times \text{Courses} \times \text{Width}} = \text{Take-up of yarn.}$$

Of these three rules probably the first is the most important from a practical point of view because it has to do in the first instance with the courses per inch, but intimately connected with the same problem is the question of the gauge of frame on which the fabric in question has to be worked. The value of such information will at once be realized for it states with a reasonable degree of accuracy the gauge of frame on which the fabric may be produced.

Example 1. Find the courses per inch of a fabric 72 yards of which weigh 28 lbs. The counts are 12 skeins (256 yard basis) 64 inches wide with a take-up of 2 1-3. Following formula (4) the solution is obtained:

$$\frac{28 \times 12 \times 256 \times 3}{72 \times 64 \times 7} = 8 \text{ courses per inch.}$$

Example 2. Calculate the courses per inch which will require to be inserted in a fabric 120 yards of which weigh 36 pounds and composed of 2/24's cotton count, 56 inches wide with a take-up of 2¼.

$$\frac{36 \times 12 \times 840 \times 4}{120 \times 56 \times 9} = 24 \text{ courses per inch.}$$

In this case the gauge of the machine may be known already but if it is not then we have in the number of courses per inch a useful indication of a suitable gauge of the frame on which the fabric could be worked. If the machine is Cotton's Patent type, then this will be about 1½ times the number of needles, whilst the courses per inch will also be the gauge number i. e., a 24-gauge frame. If the frame is a circular one, which is more likely, with a width of 56 inches, then we have the number of needles in the circumference, thus: 24 = 1½ times the needles per inch, therefore, the needles per inch = 16; 56 inches of needles, 16 to the inch = 56 times 16 = 896 needles in the circumference. The diameter of the frame can also be indicated by remembering that the circumference = 3 1-7 times the diameter. If there are 56 inches of needles around the circumference, then the diameter of the machine will be given by 56 divided by

$$3\ 1\text{-}7 = \frac{56 \times 7}{22} = 17\ 9\text{-}11 \text{ inches.}$$

Example 3. A fabric weighs 4½ ounces per yard, 32 inches wide, take-up 2¾, width 32 inches, counts of fabric 2/32's worsted. Find the courses per inch by formula (4)

$$\frac{4\frac{1}{2}}{\frac{16 \times 16 \times 560 \times 4}{1 \times 32 \times 11}} = \frac{9 \times 16 \times 560 \times 4}{32 \times 1 \times 32 \times 11} = 28\ 2\text{-}3$$

courses.

This might be worked 32 inches wide on a Cotton's patent frame, and would give 28 × ⅝ = 18⅔ needles per inch.

Example 4. It is desired to have information regarding the structure of a fabric which is desired to weigh 5 ozs. per yard and made from 2/24's cotton mercerized. The stitch required is rib with a take-up of 3¼. Width 33 inches on the machine. From formula (4)

$$\frac{5 \times 12 \times 840 \times 4}{16 \times 33 \times 13} = 29.3 \text{ courses per inch.}$$

Example 5. Ten yards of a fabric weighs 2 lbs., 13 ozs. from 32's worsted yarn twisted with 40's cotton, take-up 2 1-3. The width lies at 60 inches but this has undergone a contraction of 15 per cent from the width on the needles of the machine. Indicate the gauge required to produce this fabric.

The width on the needles must first be obtained and the percentage indicates that the former width is given by 100 but that the width at present is indicated by 85; the problem

is to get the fabric back to the original width, thus, if the present width (60 inches) represents 85 what is given by 100?

$$\frac{60 \times 100}{85} = \frac{1200}{17} = 70\ 10\text{-}17 \text{ inches wide on the frame.}$$

The next operation is to calculate the folded counts of the twist thread: Bring the cotton thread to worsted, thus,

$$\frac{40 \times 840}{560} = 60\text{'s worsted.}$$

To obtain the counts of the folded thread multiply the two counts together and divide by the sum,

$$\frac{60 \times 32}{(60 + 32)} = \frac{60 \times 32}{92} = \frac{480}{23} = 21\text{'s approximately.}$$

Both the width and the counts of this calculation now stand in the form of a rather large, vulgar fraction and the temptation is to approximate and make it the nearest half or whole number. To approximate in the middle of an arithmetical operation is never a safe policy because in so doing we always add or detract something from the actual value of the factor. Thus, in the calculation just given both the width and counts are accurately expressed and in rather awkward fractions which it would be quite advisable to approximate if it were the end of the operation which it is not. Both of these numbers require to be used another time to find the courses per inch and in this process they are subjected to a further multiplication or division, or both. It is specially dangerous, from point of view of accuracy, to approximate before multiplication; what may be an insignificant fraction in itself, will assume alarming proportions if multiplied by 1,000 for example. Therefore, for the final calculation let the counts of yarn be taken as $\frac{480}{23}$ and the widths as $\frac{1200}{17}$. Using formula (4) we obtain:

$$\frac{45/16 \text{ ozs.} \times 480/23 \times 560}{10 \times 1200/17 \times 7/3} = \frac{45 \times 480 \times 560 \times 17 \times 3}{16 \times 10 \times 23 \times 1200 \times 7} = 20$$

courses per inch. For a normal fabric 20 courses per inch would represent approximately 1½ times the needles per inch so that $20 \times \frac{1}{3} = 13\frac{1}{3}$ needles per inch.

Example 6. Formula 4 deals with the problem of calculating the width of fabric on the needles of the frame and the factors are as in the preceding examples. Calculate the width of fabric produced from 45 lbs. of a woolen yarn, 12 skeins counts, 100 yards long, 18 courses per inch with a take-up of 2⅓:

$$\frac{45 \times 12 \times 256 \times 3}{100 \times 18 \times 7} = \frac{1152}{35} = 33 \text{ inches wide}$$

Example 7. Find the width of a knitted fabric weighing 3½ ozs. per yard, 30 courses per inch with a take-up of 2½. Yarn counts = 2/28's cotton.

$$\frac{7 \times 14 \times 840 \times 2}{2 \times 16 \times 30 \times 5} = 34.3 \text{ inches wide.}$$

Example 8. Estimate the width of fabric obtained from 33 lbs. of 18 skeins woolen, 72 yards long, with a take-up of 2¾. There are 16 courses inserted per inch.

$$\frac{33 \times 18 \times 256 \times 4}{72 \times 16 \times 11} = 48 \text{ inches wide.}$$

Find the difference in width if 40 lbs. of 16 skeins, are available with the same setting of machine as regards take-up and courses.

$$\frac{40 \times 16 \times 256 \times 4}{72 \times 16 \times 11} = 51.7 \text{ inches wide.}$$

The latter examples cannot be said to be of very great interest in practical work and they are not so generally useful as the preceding examples. It is, however, conceivable that a given length of fabric would be required and that with the weight in stock it might be useful to know the maximum width obtainable from the weight of material in stock, the width being of primary importance in cutting-out many grades of knitted fabrics; if the width is not sufficient, it often happens that many a length is entirely useless for certain classes of garments.

Example 9. The fabric required is a silk gauze knitted cloth with 32 courses per inch, and 48 yards in length. The take-up of the yarn is 3; find the maximum width possible in order to work up 9 lbs. of 30/2 spun silk counts. Using formula (5) as before.

$$\frac{9 \times 30 \times 840}{48 \times 32 \times 3} = 49.2 \text{ inches wide.}$$

If the fabric structure is kept the same and also the length required, then any alteration in the weight would mean a corresponding alteration in the width in direct ratio to the weight used. Thus for the calculation just referred to, if the weight available were found to be 12 lbs. in place of 9, the new figure would be obtained by adding to the present width in the proportion of 9: 12; this is an increase of 3 on 9, or equivalent to one-third increase, which, when put on the width = 49.2 plus one-third of 49.2 = 49.2 + 16.4 = 65.6 inches for the new width. If the weight were found to be 8 lbs. then the width would be reduced by one-ninth, thus: 49.2 minus 5.5 = 43.7 inches wide.

Example 10. The problem is rather more complicated when, as often happens, two yarns in a fabric have different degrees of take-up, as in this example: Find the width of a plaited fabric which weighs 36 lbs. for a length of 96 yards, 24 courses per inch, worked as follows:

Face = 2/48's mercerized cotton with a take-up of 2½.

Plaiting = 12s single cotton yarn with a take-up of 2.

The easiest way to take this problem where the take-up of the two yarns varies is to assume that they are folded or twisted together into a two-fold thread and allow for the take-up in each thread exactly as is done for calculations of twisted yarns, thus:

24 hanks of 12's + take-up of 2 times 24 = 48 ÷ 12 = 4
24 hanks of 24's + take-up of 2½ times 24 = 60 ÷ 12 = 2½

24 hands of folded = 6½

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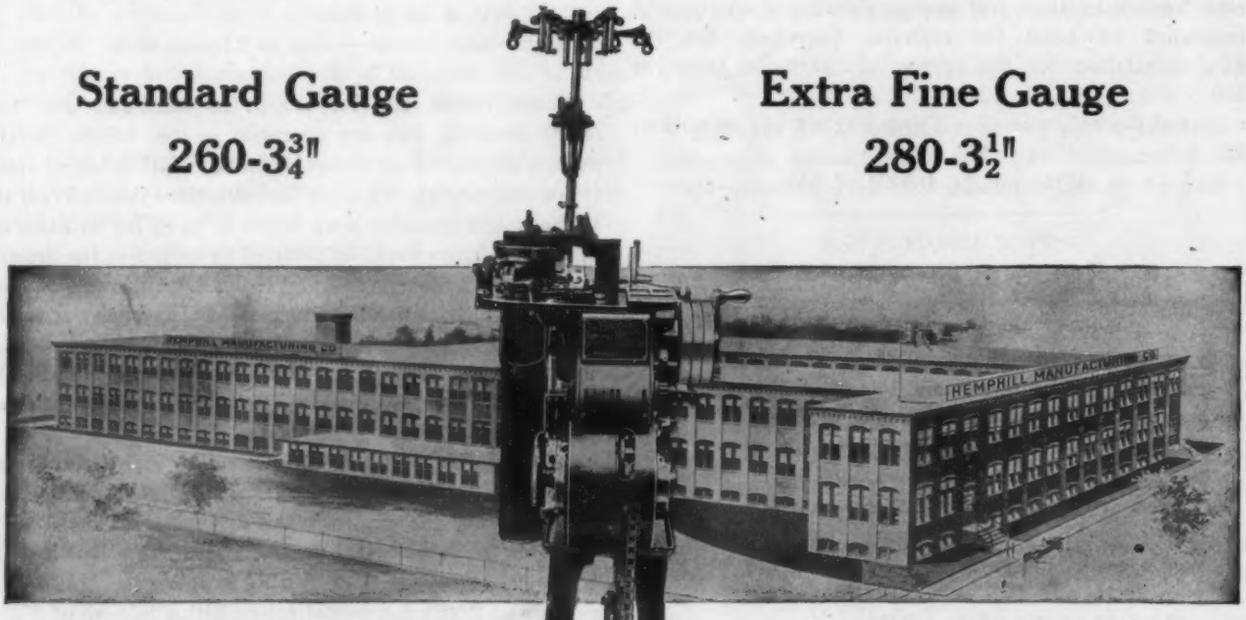

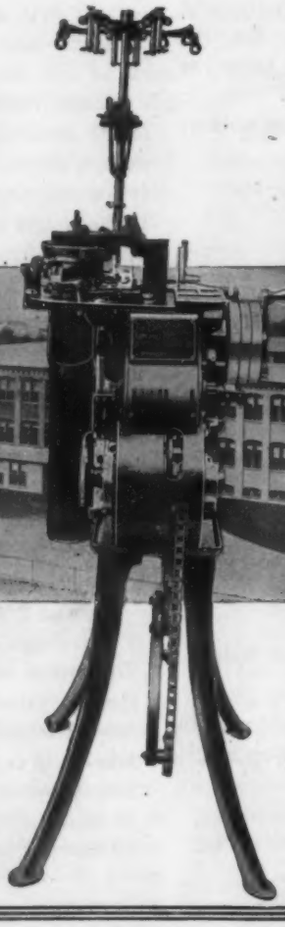

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lbs. Therefore, 24 divided by 6½=48÷13=counts required. Using the result thus obtained along with formula (5) we obtain the width:

$$\frac{36 \times 48 \times 840}{96 \times 13 \times 24} = \frac{630}{13} = 48.5 \text{ inches wide.}$$

The reader may wish to have a demonstration of the correctness of this result in view of possible confusion to the mind by the elimination of the take-up in the formula and its inclusion in the estimation of the counts of a folded thread. This proof will be made clear by using formula 1 and proceeding with the calculation of width in two operations, one for the face and another for the back of the fabric. This gives the following results:

$$\frac{96 \times 24 \times 630 \times 5}{24 \times 840 \times 13 \times 2} = 13\ 11/13 \text{ lbs. of 2/48's face yarn.}$$

$$\frac{96 \times 24 \times 630 \times 2}{12 \times 840 \times 13} = 22\ 2/13 \text{ lbs. of 12's back yarn.}$$

These added together give a total of 36 lbs. which afford conclusive proof of the correctness of the procedure.

In connection with the problem of making the most of stocks in hand, a very profitable scheme for the knit goods manufacturer is to take a periodical stock of yarns which he has on his shelves, noting the weights, qualities, sizes, etc. These should be cleared out after stated intervals, as yarns which accumulate in this way has the knack of making bad stock. Often the weights, counts and qualities show an astounding degree of variation and the manufacturer is at a loss to know how to work them up into a fabric. The principle admits of very clear and accurate exposition, as will be seen by the following:

Example 11. A knit goods manufacturer has two lots of yarn in stock, namely, 20 lbs. of material of a counts equivalent to 2/36's cotton and 8 lbs. equivalent to 2/40's worsted counts. He desires to use these two lots in the same fabric, Show how this can be done so that both qualities of yarn will be utilized to the full. Assume that the take-up of the two threads is the same.

The key to the solution is to be found in a consideration of the relative lengths of yards in the two weights of yarn mentioned. Thus for the cotton counts we have 20 lbs. of 2/36's. The counts indicates that there are 18 times 840 yards in one pound of yarn, therefore, $18 \times 840 \times 20 =$ the yards in 20 lbs. Similarly for the worsted $20 \times 560 =$ yards in one lb.; $20 \times 560 \times 8 =$ yards in 8 lbs. If we place these two lengths together and cancel out we shall obtain the relative lengths for the two lots and this will be at once an indication of the way in which they will require to be knitted into cloth:

$$\frac{18 \times 840 \times 20}{20 \times 560 \times 8} = \frac{27}{8}$$

the ratio works out as 27 of cotton to 8 of worsted which shows the proportion in which these two yarns must be worked into the fabric so that they will both finish at the same time. This number could be arranged in a pattern or stripe according to desire, in fact a large variety of different patterns would be possible.

It will be well to test the result last obtained which can be done in the following manner: Take a fabric with twenty-seven courses per inch of 2/36's cotton, and eight courses per inch of 2/40's worsted, let the width be 64 inches and the take-up 2¼. With the two weights given previously, i. e., 20 lbs. of cotton and 8 lbs. of worsted and using the formula to obtain the length gives us:

$$\frac{20 \times 18 \times 840 \times 2}{27 \times 64 \times 9} = \frac{350}{9} = 38\ 8/9 \text{ yards.}$$

$$\frac{8 \times 20 \times 560 \times 2}{8 \times 64 \times 9} = \frac{250}{9} = 38\ 8/9 \text{ yards.}$$

Both results come out identical, which is just what is to be expected, as it demonstrates the accuracy of the former computation.

Example 12. A manufacturer has in stock 100 lbs. of 2/36's worsted counts and 15 lbs. of 40/2 spun silk. Assume that the take-up of the worsted is 2½ and that of the silk 2, find the proportion in which they must be used in a fabric so as to ntilize the full weight of cloth.

This problem differs from those preceding in the matter of take-up. The greater the take-up of a yarn the less length of fabric can be obtained from it and so the length of fabric obtainable is in the inverse ratio to the take-up. The take-up of the worsted is given as 2½ and that of the silk as 2 and so the length of the former will be 2 to 2½ of the latter material. In other words, for every 4 yards of worsted we will have 5 yards of silk. Therefore, in obtaining the relative number of courses for the two materials we shall require to transpose the take-up as follows::

$$\text{Worsted} = \frac{100 \times 18 \times 560 \times 2 \times 2}{\text{Silk} = 15 \times 40 \times 840 \times 5} = \frac{8}{5}$$

The take-up of the silk is above the line and that of the worsted is under the line and the result shows that the courses will be inserted into the fabric in the ratio of 8 courses of worsted to 5 courses of silk.

Let this be tested for accuracy by taking a fabric 64 inches wide with 24 courses per inch. The courses of each material do not come out straight in this case and they do not always oblige in this way; the matter can be disposed of by taking the two figures 8 and 5 which together amount to 13. The courses of the worsted are therefore given by $24 \times 8/13$, and those of the silk by $24 \times 5/13$.

Placing these particulars into the formula 3 for the length we have:

$$\text{Worsted} \quad \frac{100 \times 18 \times 560 \times 13 \times 2}{24 \times 8 \times 64 \times 5} = \frac{6825}{16} = 426\ 9/16 \text{ yards.}$$

$$\text{Silk} \quad \frac{15 \times 40 \times 840 \times 13}{24 \times 5 \times 64 \times 2} = \frac{6825}{16} = 426\ 9/16 \text{ yards.}$$

In the latter it will be noted that the calculations are made using the take-up as given and the result coming out the same for each material shows that the first operations have been accurately and correctly performed.

THE TAKE-UP.

The calculation to find the take-up of the yarn in the knitting operation is given in formula (6) which is stated as follows:

$$\frac{\text{Weight} \times \text{Number} \times \text{Basis}}{\text{Length} \times \text{Courses} \times \text{Width}} = \text{Take-up.}$$

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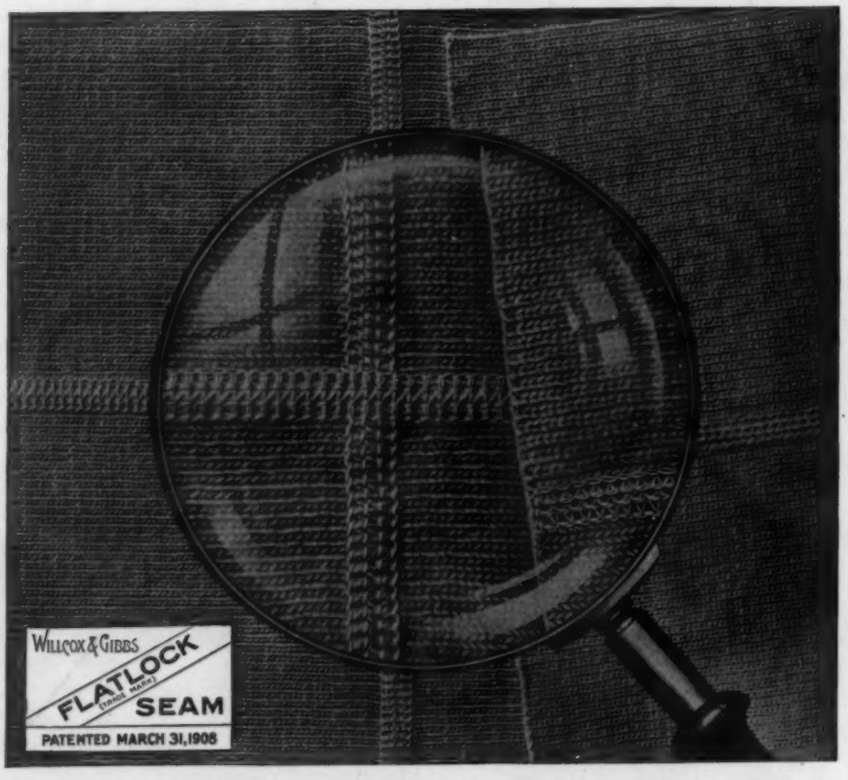

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It seldom happens that this is required for directly practical purposes although the expert might find some excellent indirect uses for it. The take-up is intimately connected with the stitch and texture of the fabric, but what is the real connection is very difficult to state in definite terms. If the take-up is shorter, then more courses can be inserted into the cloth, and if the stitch is longer, the number of courses are fewer. This is true in a general way for normal plain stitch fabrics and if it is known to be a plain fabric, the take-up should not be more than three. It is, of course, impossible to be dogmatic on this subject, but in a number of tests made by the writer when a large number of fabrics were examined and the take-up measured, it was found that the bulk of the normal plain stitch goods was between 2 and 3 in the matter of take-up, that is, if the width of the fabric on the needles were 20 inches, from 40 to 60 inches could be inserted into the width in the form of loop intersections, the great majority being about 50 inches. But plain stitch is only a limited branch of the knitting industry and the finding of the take-up obtainable from given particulars may serve to provide a useful indication of the stitch which it will be necessary to adopt in order to place this weight of yarn in the fabric. Thus if the take-up were 3 or over, it could reasonably be inferred that the rib stitch, the purl stitch, the Royal or Cardigan ribs should be selected. On the other hand, this calculation would at once answer the question as to whether it were possible to obtain a fabric at all from the given particulars. For example, if the take-up came out as 1½ or less it would be fairly obvious that such a fabric would not be possible of attainment.

Example 13. Find the take-up of a fabric which weighs 10 2/3 lbs. for a length of 48 yards, 56 inches wide, 20 courses per inch of 12's cotton. Following the formula (6):

$$\frac{10\ 2/3 \times 12 \times 840}{48 \times 20 \times 56} = 2 \text{ for take-up.}$$

This figure obtained will act as a means of orientation for the manufacturer and having obtained it, it will not be difficult to construct a kind of table showing the variation of take-up and the influence of such variation on the weight, provided the particulars of the fabric remain the same. For a series of cloths worked in the various stitches where the take-up is known accurately, we can calculate the exact difference in weight which will be produced without having recourse to the full formula on each occasion. The weight of fabric varies directly according to the take-up. In the previous example the weight is given as 10⅔ lbs. for a take-up of 2, or equivalent to 5⅓ for a take-up of 1, that is, one yard of yarn inserted into 36 inches of width. Using this as the unit, let a series of weights be drawn out to correspond to the various take-up of yarns. Let the range be 1.0, 1.5, 1.75, 2.25, 2.5, 2.75, 3, 3.25. The weight is obtained by multiplying each take-up by the unit of 5⅓ or 5.3.

Take-up	Unit =	Weight in lbs.
1	5.3 =	5.3 lbs.
1.5	5.3 =	8.0 "
1.75	5.3 =	9.28 "
2	5.3 =	10.6 "
2.25	5.3 =	12.0 "
2.5	5.3 =	13.25 "
2.75	5.3 =	14.6 "
3	5.3 =	16.0 "

Example 14. Show the variation in weight produced by the previous range of take-up in a fabric made from 8's worsted with 20 courses per inch, 56 inches wide. To find the weight per yard formula 1 is used thus:

$$\frac{1 \times 20 \times 56}{8 \times 560} = \frac{1}{4} \text{ lb. or 4 ozs.}$$

The formula is here used without the take-up with the object of obtaining the unit weight for a take-up of one.

Take-up	Unit =	Weight
1	.25 lb. =	.25 lb. or 4 ozs. per yard.
1.25	.25 " =	.31 " or 5 " " "
1.50	.25 " =	.325 " or 6 " " "
1.75	.25 " =	.437 " or 7 " " "
2	.25 " =	.5 " or 8 " " "
2.75	.25 " =	.68 " or 9 " " "
3	.25 " =	.75 " or 10 " " "

These illustrations will show the manner in which the weights can be made out for any standard cloth whatever, the weight varying directly with the take-up.

(To be continued.)

The Knit Goods Market.

Summer weather instantly bolstered up the knit goods market. There is a decided buoyancy, notwithstanding unmistakable evidence of radical price advances. Buyers, who during the cool days could not be interested, since have come into the market and paid higher prices than were quoted a week before. An instance of this character occurred in which a mail order house took out of stock 1,300 dozens of summer underwear at a comfortable margin over what the seller previously had quoted the buyer for indentically the same lot.

Hoisery, also, is sharing in the seasonal weather prosperity, although at no time in recent months was it possible for agents and commission houses to get all that they might have sold, and this in spite of the fact that in the primary market comparative quiet prevailed and still prevails. Silk hosiery in particular is very active. A large mill whose product is sold through its New York office opened its lines of silk and lisle one week and withdrew them the next week, having sold up to mill capacity. A Pennsylvania mill had a similar experience, selling as far ahead as it cared to in three days.

So long as women wear furs in hot weather, such as was experienced toward the close of June, they may be expected to buy silk hosiery, regardless of price.

Knit goods manufacturers will have a new issue with which to contend after the 15 per cent advance in freight rates, which now seems assured, has been allowed. This will come as a result of granting New York freight allowance, usually 40 cents per hundred pounds. Much merchandise sold under the present rate will be delivered under the higher rate. The question that will arise between seller and buyer is, "Is the seller to grant allowances on the basis of 40 cents or 46 cents?" The latter figures represent the present allowance plus the 15 per cent. The seller will contend that the sale was made at a price contemplating allowance on the then existing freight rate. The buyer will contend that he purchased the merchan-

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dise with the understanding that the freight from Philadelphia to New York was to be assumed by the seller, and that he sold the goods on that basis.

The matter bids fair to become the issue in any number of controversies, and if past experience may be accepted as a criterion, payment will be withheld—in a majority of such cases—until the allowance, regardless of the higher rate, has been granted. The next step, again referring to the past, will be an ultimatum from the seller that the merchandise still due under the unfilled order will not be delivered until payment has been made for what has been shipped.

It will be well, a circular from the National Association of Hosiery and Underwear Manufacturers will say, for mills granting freight allowance to state specifically on orders and acceptances that the amount of the allowance shall not be more than if the goods had been delivered before the advance in freight rates. It is expected among large concerns with which the subject has been discussed that so soon as the Interstate Commerce Commission sanctions an increase there will be a rush to have deliveries go through in advance of the advance becoming operative. Mills already in arrears for deliveries and with orders piling up for next spring, will be particularly interested in having an understanding for relieving them from liability for the addition, and if they be firm in the matter merchants will be equally interested in having the goods in warehouse to escape the increase.

Interest in the hosiery trade is centering chiefly in the opening for spring 1918. While some few manufacturers have gone out with their lines and named prices, there has been practically no buying. As a matter of fact, neither side is ready to talk spring business. A number of important manufacturers have said that they will not offer spring goods before September, and some of these say they will sell for deliveries up to May. Few mills show any interest in the opening, and the prospect is that nearly all will go out at what they regard the most auspicious time, the opening being on a go-as-you-please basis. This is what some of the large New York houses selling the production of a number of large mills propose doing. There are no longer seasons for selling hosiery, say some mill representatives.

It is a foregone conclusion that many manufacturers will feel a necessity for watching the movements of competitors, and that there will be some quiet selling by manufacturers here and there, intent on obtaining an advantage. It is quite improbable that any understanding as to opening will be reached, as the matter appears at long-range view.

Practically all of the Pennsylvania underwear manufacturers have their lines out for spring, and are doing business. Orders call for deliveries not later than January, most mills requiring that the merchandise be taken in earlier, and some few specifying August to October. One manufacturer adds five cents a dozen on deliveries after January 1. One mill wires its selling agent to take no further business for combed yarn goods; that it is sold up to January. Another has withdrawn carded goods for the reason that it has sold as far as yarn purchases will permit.

Prices for next spring show an enormous increase, according to mill executives and selling agents. As an illustration, Pennsylvania garments that opened last year at $1.85 and thereabouts are being taken by the trade at $3.50 and better. These are types of garments in which labor figures largely.

A New England mill selling retailers exclusively, under its own brand, expects to get $8 a dozen for a women's cotton summer union suit which it put out last year at $4.12½. This mill has announced a 10 per cent wage increase, effective July 1st, a total increase of 42 per cent since July, 1916. An executive who has gone carefully over the greater costs of yarns and labor, figures out that the increased cost of production will be 85 per cent.

The balbriggan group probably will agree upon August 1st for showing their lines. Some of these manufacturers prefer to defer the opening to September 1st, a more widespread disposition in this direction having developed when cotton approached the 30 cent edge.

A New York State mill which has completed deliveries of all its orders for the current season is getting fancy prices for some surplus stock. One merchant only a few days ago paid $5.75 a dozen for a rib union suit which opened a year ago at $3.87½. It is expected this garment will sell at $6.50 for next season.

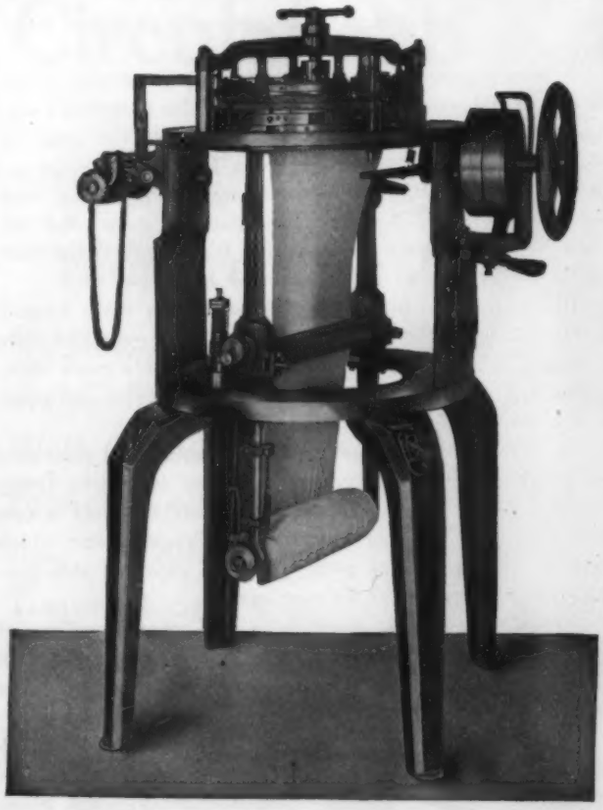
One of the largest concerns in the country, selling its production of branded underwear to the retail trade, will not name prices until October 1, notwithstanding other manufacturers may have their salesmen on the road.

A St. Louis jobbing house executive while in Philadelphia a week or ten days ago expressed regret that there should be any delay in opening underwear. His house, he said, has bought most of its light weight stuff for spring and already has sold its customers approximately 50 per cent of what they took a year ago. "We know as much about cotton as we will know a month later," he said, "so why not get into the game right away?" He said this before cotton struck 27.

Viewed from whatever angle, an active market is in prospect, and there is no need of haste in going after business at prices that do not contemplate material advances in labor costs and supplies. A mill near Philadelphia rejected a substantial half hose order, although the price offered was acceptable. The mill is being operated with day and night shifts and yet is not abreast with its orders. This promises to be the situation in many mills making standard goods. Another near-by mill is operating but 25 per cent of capacity because of labor trouble. Many are crippled for want of needles. All told, production is far short of capacity, a big factor in the continued shortage.

The needle situation cannot improve for some time, say manufacturers' representatives. None at all are coming from Germany, more knitting machinery is being sold than ever before, needle wire is unsatisfactory, resulting in excessive wastage, and needle manufacturers are having the same difficulty in the matter of labor as is experienced by knitting mills. Hence the improbability of a sufficient number of needles for months to come.

An element entering into the labor shortage is the call of the railroads for female help for office work. The Pennsylvania and Reading Railroad Companies are maintaining a sort of training school, in which girls are being drilled in the class of work which they will be expected to perform. They are to be paid $50 a month at the start. It is no wild guess that the bright mill



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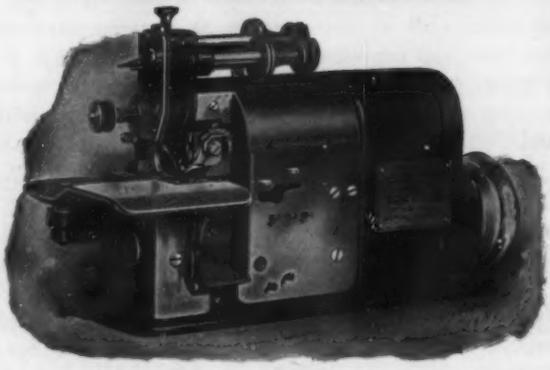

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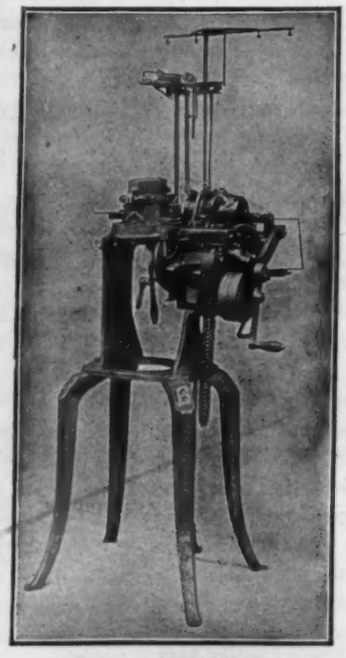

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girl will desert the knitting room for a desk in a railroad office.

A Philadelphia jobbing house, discussing the needle shortage and the transition of mill help to railroad office or munitions factory, looks for very high prices for spring, and is taking in all the merchandise it can get, preferring to have it in warehouse to speculating on the manufacturer's ability to deliver later. With $50 pig iron, wheat dancing around $3, cotton scraping 30 cents, coal commanding about any price the mine operators choose to fix, and the government alarmed over a prospective car shortage, we cannot but feel that knit goods must sell at amazing prices as we go along, said an executive of this house. "The manufacturers can't help it," he added.

Merchants are beginning to inquire as to what will be the language of the guarantee which manufacturers must affix to invoices when the Federal Child Labor Law becomes effective September 1st. The manufacturer, it is pointed out, will have to guarantee that the merchandise covered by any invoice was manufactured in accord with the provisions of the law. Some mills already are being asked by merchants to stamp the guarantee on invoices of the present, although the law will not go into operation for two months. Complying with this request, a Philadelphia hosiery manufacturer is having all invoices rubber-stamped: "The merchandise represented on this order copy (or invoice) is manufactured in accordance with the Federal Child Labor Act of September 1st, 1916."

Government authorities have promised to submit a tentative form of guarantee in ample time. The desire of some merchants to have the guarantee now, probably is due to the fact that merchandise delivered to them prior to September 1st will go to the retail trade with goods made up after that time, and that thus it will be not necessary to keep the early and late deliveries separated for protection against having any of the latter shipped to their customers without the guarantee. It is another of those annoying little details to which dealers must give attention lest they get into the clutches of the law—one more formality that has been imposed at the behest of labor.

But not all the troubles of the manufacturer can be charged the government or labor. Most of them are due to their own neglect, instances of which come to light from day to day. A selling agent placed an order with a hosiery mill in Philadelphia for delivery in Boston. Months elapsed and the goods were not delivered, for reasons of the manufacturer. The Boston merchant, weary of waiting, dropped in upon the selling agent and purchased a case of hosiery out of stock. How he refuses to pay for this shipment until the selling agent procures delivery of the goods due from the Philadelphia mill, and the agent is going into court, at an expense probably equal to the amount at issue, to force settlement.

The merchant clearly is at fault, so far as the transaction with the selling agent in the direct purchase of the single case is concerned, yet is in position to wield a club, which no doubt the court will render useless. The controversy could have been averted had the agent rubber-stamped the order, as many manufacturers now are doing, as follows:

> If buyer fails to pay, in accordance with terms and at prices stated, for any merchandise delivered under this or any other accepted order, seller reserves the right to hold back deliveries until payment has been made, or to cancel the unfilled part of the order.

The foregoing form is becoming quite popular, and for the convenience of its members is being supplied by the National Association.

Manufacturers, many of them, who make worsted underwear have reached the conclusion that it was a serious mistake to summon the worsted yarn spinners to Washington on June 12 to account for the high prices that had been put on yarns going into garments for the army and navy. Since the quiz, it is stated, worsted yarns have gone skyrocketing. As an illustration, 45's singles, which are being delivered at around $1.45 a pound, were commanding $2.75 a week after the visit, with $3 being quoted, the price jumping day by day. It does not look as though there would be much wool in civilian garments sold by mills after this year.

Among the Knitting Mills.

The Mitchell Hosiery Co,. Columbus, Ga., which is incorporated under the laws of Maine, with an authorized capital of $200,000, will open for business at the corner of Front and Main Streets, Columbus, in a short time. The mill is to be equipped in modern shape and will do its own dyeing, bleaching and finishing. The daily output will be approximately 500 dozen pairs of hose. John A. Mitchell, the former head of the Hamburger Cotton Mills of Columbus, is president of this new organization and A. H.Mitchell is secretary-treasurer.

It is reported that R. G. Brumby of Marietta, Ga., contemplates the erection of a small hosiery mill and is now receiving prices on machinery and equipment.

The Runnymede Mills No. 3, Inc., at Wilson, N. C., has changed hands, and A. McDowell, president of the Scotland Neck Cotton Mills, has become president of this mill also. The knitting machine equipment of this plant has been increased to 131.

The Ideal Hosiery Co., at Elizabeth City, N. C., has been incorporated with a capital stock of $50,000 authorized. The incorporators being N. G. Morisette, W. B.. Saunders and M. B. Simpson.

At a recent meeting of the board of directors of the Norfolk Knitting Mills, Inc., of Norfolk, Va., D. L. Kelly was chosen president. Mr. Kelly has been associated with the firm since its organization in the capacity of manager and buyer and will continue as such. He is a practical mill man of unlimited ability and his success will be received with warmest enthusiasm by numerous friends. Mr. Kelly is also a master knitter which has been a valuable asset to his progress since he left New York State in 1901 to take charge of the knitting for the firm of Dixon and Johnson Co., of Norfolk.

The Jewel Knitting Mill Company, Statesville, N. C., has received its charter and is now a Statesville corporation. The stockholders at a recent meeting elected as directors: E. B. Watts, F. B. Bunch, J. L. Sherrill, R. T. Weatherman, Derman Thompson, F. B. Holland and Clarence Stimpson. Officers were elected as follows:

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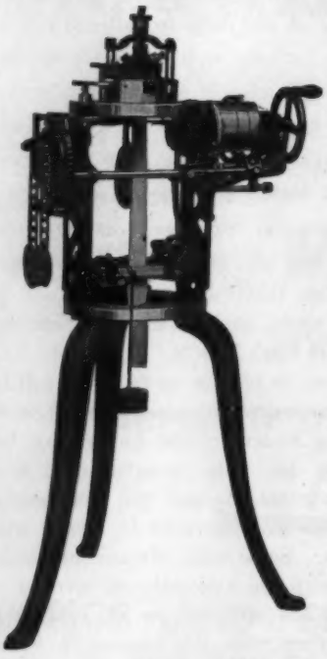

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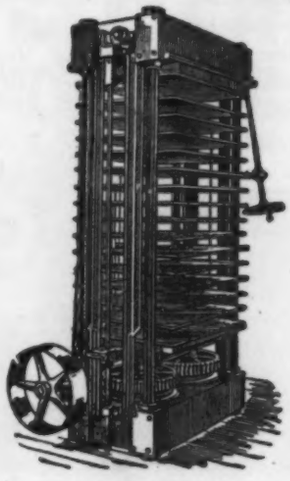

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Manufacturers of
CIRCULAR RIB KNITTING MACHINERY
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All hosiery mills **SHOULD TRY** our machines,
AND
All hosiery mills **WOULD BUY** our machines.

Write for our FREE TRIAL—SPECIAL PRICE—and SPECIAL TERMS—OFFER to mills that have none of our machinery in use.

President and treasurer, F. B. Bunch; vice president, E. B. Watts; secretary, J. L. Sherrill. The company has an authorized capital of $100,000, paid in stock $20,000. Machinery for the new mill has been ordered. Work on the building and installation of machinery will be started about August 1st.

It is reported that the plant of the Alden Mills, Meridian, Miss., is to be enlarged extensively.

John & James Dobson, Inc., Philadelphia, Pa., manufacturer of worsteds, yarns, etc., will build an addition to its plant on Ridge Avenue. Plans for the structure have been filled.

The Edgewater Finishing Company, 4080 Frankford Avenue, Philadelphia, Pa., will build a four-story reinforced concrete and brick addition to its textile finishing plant, about 100x157 feet.

The Botany Worsted Mills, Dayton Avenue, Passaic, N. J., has commenced the erection of two new additions to its plant to cost about $395,000.

The North American Hosiery Manufacturing Company, Philadelphia, Pa., has been incorporated with a capital of $10,000 to operate a local plant for the manufacture of hosiery. Max Lomis is head of the company.

The Keystone Knitted Fabric Company, Tenth and Allegheny Avenues, Philadelphia, Pa., has increased its capital from $25,000 to $100,000 for expansion.

The Arrtee Knitting Mills, Philadelphia, Pa., has commenced the operation of a new plant at 147 North Twelfth Street, for the manufacture of knit goods of various kinds. The plant is electrically operated throughout. M. Ribkin and A. Titleman are heads of the company.

The Utica Steam & Mohawk Valley Cotton Mills, State Street, Utica, N. Y., has increased its capital from $2,500,000 to $5,000,000, for business extensions.

The Central Hosiery Company, Adamstown, Pa., has filed articles of incorporation with capital of $20,000 to operate a local mill. Homer L. Stork is the principal incorporator.

Albert Weber, Reading, Pa., has commenced the erection of a new mill at Linfield, to be used for the manufacture of hosiery.

The Stead & Miller Company, Fourth and Cambria Streets, Philadelphia, Pa., manufacturer of textiles, has awarded a contract to Furness Evans & Company, Franklin Bank Building, for the erection of a six-story brick addition, about 60 x 90 feet to cost $100,000.

The Burns Knitting Company, Hancock and Somerset Streets, Philadelphia, Pa., has made application for a charter of incorporation. Joseph A. Dolan and Harold Burns are the incorporators.

George W. Lefferts & Company, Inc., Philadelphia, Pa., manufacturers of yarns, are taking bids for the erection of a three-story brick addition to their factory at Third and Moore Streets.

The Lenoir Hosiery Hills, Lenoir, N. C., have been incorporated with an authorized capitalization of $500,000, of which $6,000 has been paid in. J. C. Moore of Lenoir, F. P. Moore of Globe, N. C., and J. Clark Moore of Mortimer, N. C., are the incorporators.

Nothing succeeds like success, unless it is the manner in which some failures fail.

BOOK REVIEWS

All Books Reviewed Under This Heading May Be Procured From COTTON at the Published Price.

OFFICE ORGANIZATION AND MANAGEMENT, by C. C. Parsons, Manager Shaw-Walker Co., 313 pages, 59 illustrations.

The successful organization of the present day is a complex affair. It is a well-done, finished compound that issues from the business caldron into which has been thrown such a diversity of ingredients as would have astonished the business men of an earlier generation. That the author does not shrink from this complexity is shown by the list of chapter headings: Organization; Laying Out the Office; Office Employees; Office Training; Rules and Regulations; Discipline; Methods of Payment; Promotions; Increasing Efficiency; Suggestions and Ideas; Esprit de Corps; Vacations; Encouragement of Savings; Making Employees Stockholders; Pension Systems; Welfare Work; Machinery of the Office; Records and Systems; Advertising Department Records; Sales Department Records; Credits and Collections; Records; Order Department Records; Purchasing Records; Store Records; Shipping Records; Cost Accounting Records; Mailing Department; Supervising Office Work; Office Manager. All these subjects are treated in the broadly human, common-sense spirit of the man who has wrestled with the problems and mastered them in actual practice. Few business texts succeed so well in bringing the atmosphere of the world of business into the classroom. The office manager, he says, "must have had that experience which gains for him a comprehension of the possibilities and limitations of humankind; for he is to deal not with one class of employees, but with the succeeding grades from office boys, packers, and shippers, up to the highest executive." The book is published by LaSalle Extension University, Chicago, and forms part of the material in its course on Business Administration.

DOCKHAM'S GLOVE AND MITTEN MANUFACTURERS' REPORT AND DIRECTORY FOR 1917. Bound in paper, twenty-six pages, published by the Dockham Publishing Co., Boston, Mass. Price $2.00.

This directory contains the list of the different glove and mitten manufacturers under the kind of gloves and mittens manufactured, whether leather, cloth or knit, and whether light or heavy. It includes the number of sewing machines used, the power used, city offices, and whether they sell to jobbers or retailers. The list is also arranged alphabetically by states, cities and firms, and the street and number is given.

The Link Belt Company, Chicago, Ill., have printed in colors a portion of President Wilson's proclamation which they feel is of particular interest to manufacturers at the present time. They are sending these hangers to any interested party on request.

Knitting Needles and Needle Manufacture.

The needle maker, although he need only be an imitator, must know the salient points of the function of the needle. He must know where even a few ten-thousandths will make or mar the usefulness of his needle; in other words, the knitter has the last word with the needle, and needle makers must be prepared to admit this. Hence a needle maker should understand the technology of knitting and the fundamental functions of loop forming, or his practical engineering knowledge cannot be applied with that amount of usefulness and certainty as is necessary to produce the perfect needle.

BEARDED NEEDLES AND LATCH NEEDLES.

As is well known, there are only two fundamentally distinct types of knitting machine needles, viz., bearded needles and latch needles. The former is by far the simpler needle to manufacture, and the chances of error in manufacture are not nearly so great. In the first case the total length of the bearded needle is not of vital importance in the majority of cases, as the knitting length is decided by the casting of the needles into "leads" or by cracking, both operations of which are usually performed in the hosiery factory. The length of the beard is of vital importance, as variation in length may cause stitches to be thrown off or tucked.

The depth and width of the eye which forms a receptacle for the tip of the beard in the pressing operation are of great importance, and this fact is often ignored. If the eye is too shallow the loop may be split as it is brought forward. If the eye is pressed out too deeply and the surplus displaced material not removed, then the extra width may cause cutting owing to the sudden expansion of the loops as they are brought over the eye. As a matter of fact, for fine work the width of the eye should in no case exceed the diameter of the needle wire.

The milling of the beard is another important point, as if the wire is left too full on the beard, especially at the head of the needle, as is more often the case, the pressing operation is too severe and a great strain is placed on the needles and operating parts and the loops require more knocking over.

The batter of the shank or stem is another vital point, and the extent of the batter depends upon the length of the needle and the conditions under which it has to work.

Needles used in straight-bar frames should be battered considerably, as by these means the strength of the needle to withstand the pressing operation is greatly increased, and as the lateral stress is small, the reduced thickness of the needle shank is of little importance and more room is obtained for sinker and yarn clearance. For use in circular frames where there is a considerable sideway strain, excessive batter is detrimental, and in many cases it is found preferable to omit this operation entirely, or to batter that part which is afterwards surrounded by the metal in casting to prevent the needles from working loose in the metal or lead.

Bearded needles which are afterwards cast into leads should always have their shanks or stems corrugated at the end in order that the casting metal may be keyed on to the needle and thus prevent the latter from being pulled out of the lead slightly during the knocking-over operation.

The debatable points of the bearded needles are as follows:

1. The length of the beard for gauge and machine.
2. The cramp of the beard.
3. The length of the eye.
4. The batter of the shank or stem.

1. The length of the beard has never been standardized, with the result that frames identical in build and gauge possess beards differing greatly in length. A long beard has its advantages in causing longer motion and liability to miss the eye through sideway deflection.

On straight-bar frames working with pressers, longer beards are essential owing to the disposition of the presser plates, but for the making of plain work some standardization is becoming a necessity, as it would relieve the needle manufacturer of much alteration of his machines in making the various lengths of beards.

With circular frames the length of beard is usually much shorter than that of a similar gauge needle on a straight-bar machine, owing to the fact that with the rotation of the needles and pressers the sideway strain is much greater, and the longer the beard the greater the danger of sideway deflection. For the same reason the beards should be made flatter and wider to withstand this strain.

2. Bearded needles are sometimes cramped in the beard near their centre. This is essential when the needles are used on frames like hand and rotary jack and sinker frames and loop wheel circular frames where the new loops are left free under the beards whilst the latter are still open. This cramp holds the loop, the latter practically being enclosed between the cramp and the head of the needle until the pressing and knocking-over of the old loop has been accomplished. On frames where the loops are held by the sinkers until the needles are pressed like the Cotton's patent or French circular frames it is sometimes still retained.

3. The length of the eye of the needle may seem of little consequence, but in reality it is of primary importance, as in straight-bar frames the needles are cast a set length so that the sinker nib comes just clear of the eye. If the sinker touches the needle it glances off the round wire, but if the new needles possess a longer eye, then the sinker is rather deflected into the eye than off the needle.

Usually the eyes of bearded needles are made too long, as for ordinary knitting it is solely a receptable for the tip of the beard to ensure a clear way off the needle of the old loop, and it is the minimum that should be sought for with the necessary safety allowance. To prove this examine a needle that has been at work in a machine where lather has been used for lubricating the yarn, and it will be found that by far the greater portion of the eye will be filled with oily lint.

On frames with fashioning mechanism "long-eyed" needles must be employed, as the tip of the point which covers the beard must also find a receptacle in the needle eye, although here, again, the eye is usually made longer than is really necessary.

The eye of a needle is frequently a cause of cutting, and if the groove is pressed out too deep the walls are very thin and the edges act like a knife unless the needles are given their full time in the "barrel." Similarly, bulged

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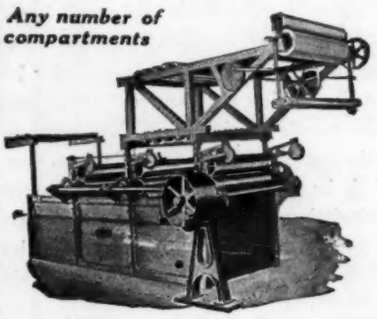

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SALEM IRON WORKS
Winston-Salem, N. C.

out eyes, which are wider than the diameter of the needle wire, put a severe strain on the loops especially when a tight stitch is employed.

4. The question of the batter depends, as previously mentioned, on the strains to which the needle is subjected. Long needles require more batter in order to strengthen them to withstand the pressing operation. Short needles need little batter, and in warp looms where the threads are traversed and the sideway strain is severe, excessive batter is a drawback, as the resistance to lateral strain is weakened.

Latch needles are more complicated to make, and a much greater number of needle making machines is required.

The important parts of the latch needle are as follows:

1. The hook, which usually draws the knitted loop.
2. The latch which closes the hook and which enables the loop clearance to be automatically effected, i.e., self-acting.
3. The rivet on which the latch is fulcrumed.
4. The cheeks which hold the rivet.
5. The saw-gait or groove which receives and steadies the latch.
6. The throat, i.e., part immediately below the open latch.
7. The butt, through the agency of which the needle is moved.
8. The shank or extension below the butt.

Latch needles are now made in one of two styles:

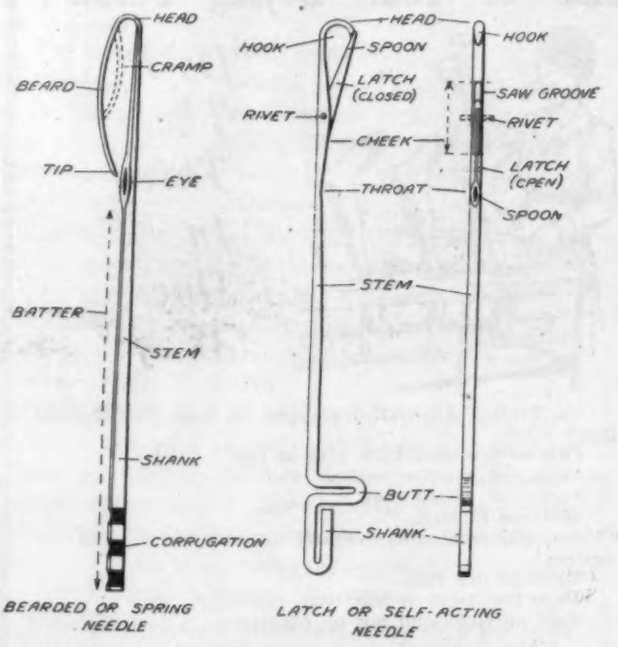
(*a*) The wire needle in which the shank and butt are made by the flattening and turning of the wire.

(*b*) The "pressed-out" needle which is made from sheet steel, the butt and shank being pressed to shape and the upper part reduced to the dimensions required for throat, cheek, and hook.

1. The hook is a most important part of a latch needle. Before the hook is turned the wire is cut off to length and drawn out thinner at the end by means of swaging," i.e., the wire is placed between two dies in which have been cut with mathematical precision tapering semi-circular grooves. On the application of pressure the wire assumes the tapering size and shape of the swage dies. The hook is afterwards turned and should be truly semicircular in shape with the end of the hook projecting slightly beyond the half-circle and left straight on the inside of the hook and tapered off almost to a point on the outside. The practice of turning the hook sharper at the back has nothing to recommend it, and has now been discarded by modern needle makers.

The dimensions of the hook are of great importance, as large hooks forbid the use of a tight stitch and small hooks miss the yarn and cause skipped stitches and pinholes. But although this is an acknowledged fact, there is no standard dimension per gauge, and machine builders will often vary the size of hook of the needle to suit manufacturers' requirements, i.e., make the machine work up a class or number of yarn for which it has not originally been designed. Some day, perhaps, a knitting Whitworth will arrive, and we shall positively get needles with standard size parts, but until then we shall still go on knitting with hooks a *bit bigger* or a *shade less*.

2. The latch in itself is a complete part, and even now most needle makers spend about six operations on it in the making. True, there is an American machine now on the market for producing latches automatically, but in Great



Britain where 10,000 needles is still considered a big order, these machines cannot be used with the proper economy; so we still go on cutting off, battering, holing and spooning latches in the good old-fashioned way.

The latch makes or mars the needle. All abrupt edges should be avoided, the batter should taper towards the spoon, the spoon should be truly elliptical and convex on the outside towards the upper end so that a clear smooth passage off the needle is afforded for the loop.

The length of the latch is, of course, not standardized, and on needles used in the same gauge machine, varies so much that the minimum length is one and the maximum two. Just imagine machines working side by side, exactly the same gauge, knitting from the same yarn with a 100 per cent variation in the latch length. Verily truth is stranger than fiction.

The point of contact of latch and hook is of primary importance. If the latch overhangs the hook the diameter of the hook is in reality increased without any compensation in room for drawing the yarn. If the latch but just meets the hook, a knot or thick place in the yarn will force the latch in the hook and tuck stitches will result. The spoon really corresponds to the eye of a bearded needle and the tip of the hook to the end of the beard, the spoon of the latch should cover the tip of hook, whilst the end of the latch and the hook should be as nearly as possible continuous.

The dimensions cannot be considered in thousandths, but in ten-thousandths of an inch.

3. The rivet is a small spindle on which the latch swings. It must be firmly held in the cheeks of the needle and allow the latch to swing freely. In this country the latches are threaded on to the wire whilst in position between the cheeks, the rivet cut to length and riveted up afterwards in the cheeks. There have been screwed-in rivets, but—enough said.

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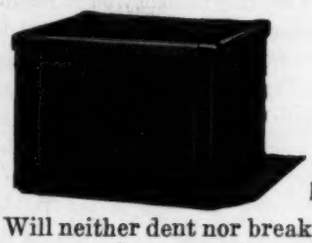

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4. The cheeks which have previously been battered to shape are punched slightly smaller than the latches and should be countersunk so that the riveting may be effective.

5. The groove or saw-gait is cut by means of a small circular saw, and should be of such a dimension as to allow the latch to swing freely but yet allow no side play. If the groove is too open then a lateral movement is allowed the latch with the result that the latch instead of closing the hook gets on one side or the other, with the result that the loop goes into the hook instead of coming off the needle. The cutting machines usually carry two saws, and are set to cut a certain pre-determined depth, at which point the saw is automatically raised out of action. The needle is pushed up to a stop and everything is automatic so that the machine can be worked by unskilled labor.

6. The throat is milled out under the bottom of the open latch so that when the loop is cleared from the latch it must overturn the latch on the return movement of the needle. If the saw-gait is shallow so that the latch cannot fall to a practically vertical position, the throating operation may be omitted, as it is sometimes, but unless the latch falls on the needle stem it is obvious that the loop when held on the latch exerts a considerable pull on on the rivet and tends to loosen the latter in the cheeks.

7. The turning of the butt of wire needles is a most important operation, and although excellent machines are available, the setting of the length is of vital effect. The length should be dead true. It must be remembered that knitted loops are often not more than one-thirtieth of an inch long, and, hence, any variation in length must be multiplied by 30 or whatever the number of courses per inch. True the knitted loops exert a leveling tendency on adjoining loops so that a slight variation of *one* needle may not be visible. But when a number of shorter or longer needles are together, as would be the case if a smash-up happened and the new needles varied slightly in length from the normal, a visible effect would be produced on the fabric which would be rendered unsalable.

8. Shank or extension beyond the butt is not fundamentally essential, but is of great use for strengthening the butt, the part which is actuated by the cams. In such cases where friction needles, i.e., needles which must not fall in the tricks by gravity alone, this extension is formed into a spring which, binding on the sides of the tricks, supplies enough friction to prevent the needle falling where unsupported by rest cams.

Diagrams of needles showing the fundamental parts are shown in the illustrations so the reader may follow more easily the written matter.

When it is remembered that there are actually, not merely literally, thousands of types of needles, some types of which, although necessary, are only needed in small quantities, it will be understood that the needle problem cannot be solved by talking alone.

One point that has been overlooked to a certain extent by manufacturers, and a point that would save the needle manufacturers much trouble in the alteration and setting of their machines, is that a slight difference in the dimensions of various parts of the needle, while preventing the use of such needles in conjunction with the type at work in the machine, does not necessarily mean that the machine would not work quite correctly with a full set of such needles.

If manufacturers would remember this and be prepared even to make slight modifications in the knitting action of the machine to allow of this, the trade would benefit all round.

Even a semi-standardization of needles commenced in a simple way, as just mentioned, might ease the situation and help machine builders, hosiery manufacturers, and needle makers alike to realize what a tremendous saving could be effected by a carefully considered standardization.

Take, for instance, the innumerable types of automatic knitting machines of the same gauge, and admitting there is a reason for friction and non-friction needles, longer or shorter stems, can any sane person say there is any reason for variation in the latch length?—*The Hosiery Trade Journal.*

Shipping Department Supplies.

Shipping department supplies form one of those comparatively small items in the maintenance of textile mill production that are often overlooked as being of of little consequence, and such action thereby frequently entails a considerable loss to the mill, especially when such action continues over a period of years. The A. J. Bradley Manufacturing Co., of 100 Beekman Street, New York City, who are claimed to be the largest manufacturers of oil stencil paper and stencil inks in this country, manufacture a number of specialties for the shipping department well worth the consideration of the careful plant manager. Among these may be mentioned the Bradley stencil machine, which makes stencils in a half minute at a cost of approximately one-tenth of a cent each, the Bradley combination "Ball" marking and stencil pots, stencil brushes, nail pullers, fountain stencil brushes, and many other special items for individual mills.

The Loom Reed & Harness Co., of Charlotte, N. C., was started by James Leslie in 1898. Mr. Leslie organized and started the first Reed shop in the South in 1895 then known as the Southern Card Clothing & Reed Co. In 1897 he withdrew his interest in that concern and a year later started in business for himself, starting the Loom Reed & Harness Co., which is the oldest reed manufacturing concern in the south today. In 1905 he began experimenting with tempered steel wire reeds using a special grade of cast steel wire, and tempering it by a process of his own, using a special electric furnace of his own design. One year later he put the tempered steel reeds on the market, he kept on making improvements till 1912 when he had a reed that would back up all his claims and in some cases more. His son, S. C. Leslie, the present manager, started in the business under his father in 1903 and helped him in all his experiments thereby getting first hand knowledge as to making tempered steel reeds in all the processes.

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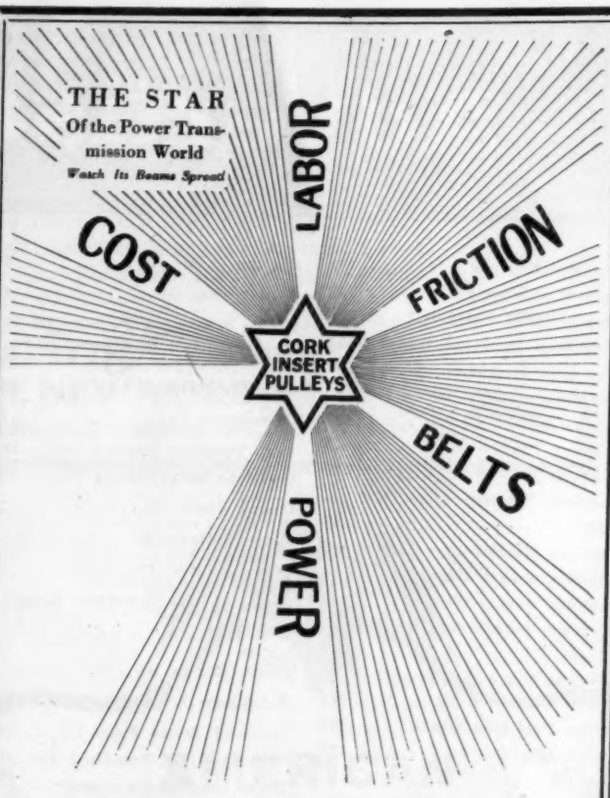

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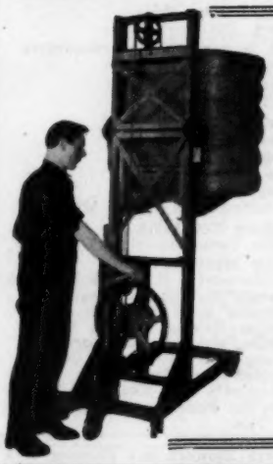

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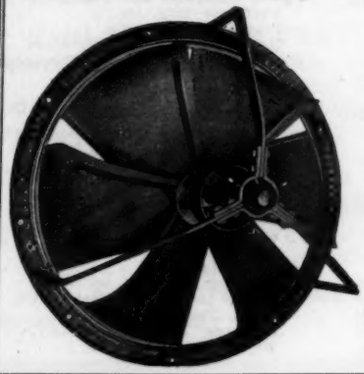

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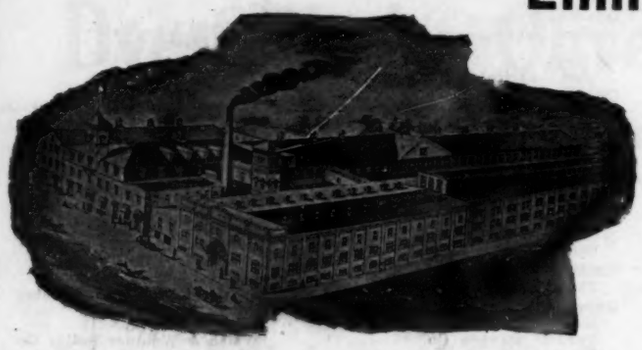

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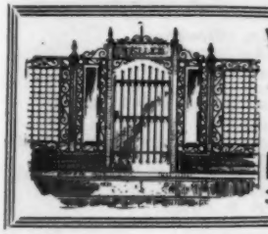

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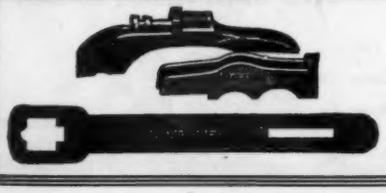

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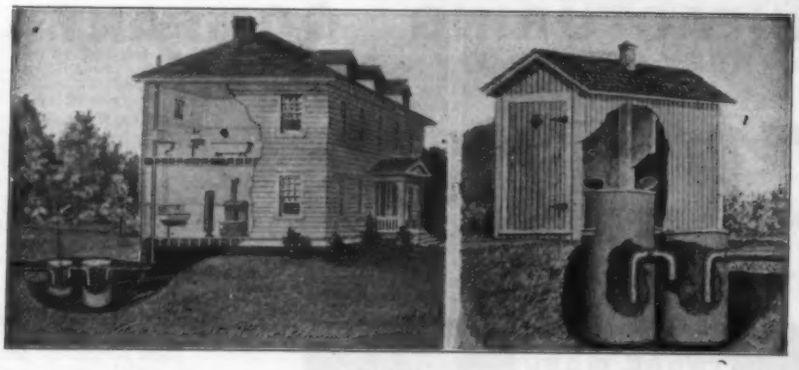

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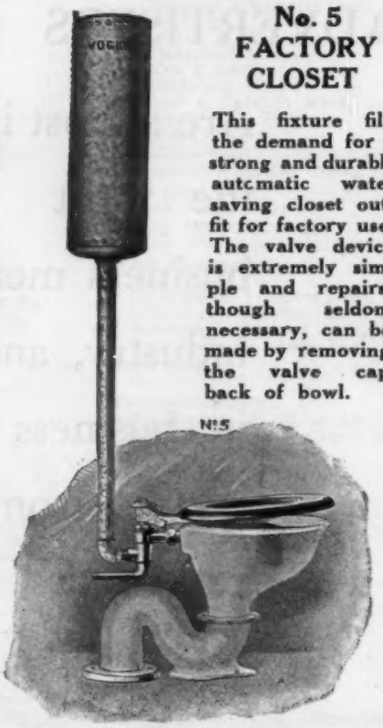

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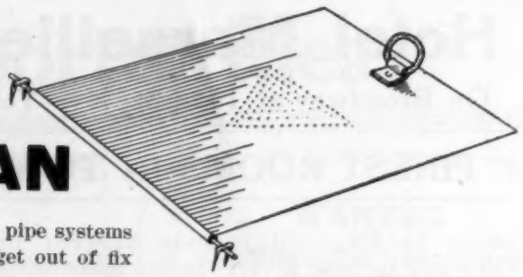

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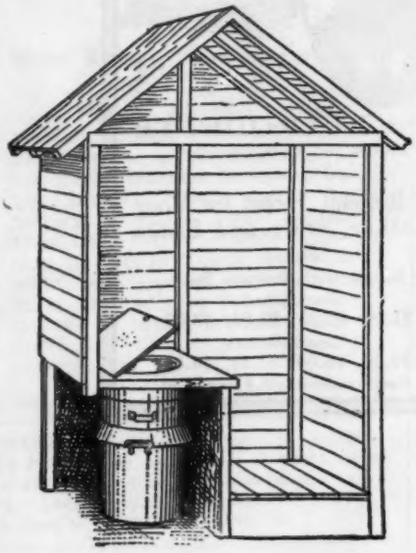

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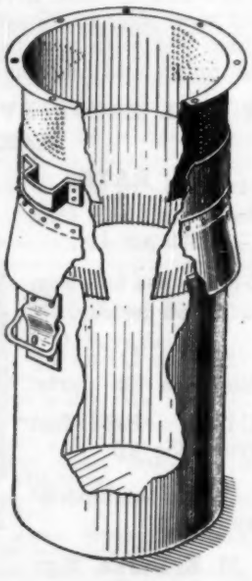

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It is situated within a short distance of the business, shopping and theatre districts, and is in close proximity to all railroad stations.

Single Room with Bath
$2.50 to $4.00
Double Rooms with bath
$3.50 to $5.00

L. C. PRIOR,
Managing Director.

Boston

Hotel Marseilles

On Broadway at 103d St., New York

FINEST ROOMS IN TOWN

owing to delightful location between Central Park and Hudson River. In the midst of beautiful west side residences, removed from noise and dust, yet within a few minutes of the business, shopping and amusement centres.

YOU'LL ENJOY EVERY MOMENT AT THE MARSEILLES.

LOW RATES.

Room and bath from $2.00 per day.

2 Rooms and bath from $3.50 per day.

Superb Dining Room a la carte.

Club Breakfast from 35c up.

Write for booklet and map.

M. E. Burke, Mgr.

Subway Express Station on Corner.

Mr. Glancy
of
The MARQUETTE
16th St. and Washington Ave.
St. Louis

A Refined Hotel for Your Mother, Wife and Sister

Rates:
Room with Private Bath
One Person
$1.50, $2.00, $2.50, $3.00
Two Persons:
$2.50, $3.00, $3.50, $4.00
Rooms without bath, $1 and $1.50

Georgia Railroad

EFFICIENT AND RELIABLE

Passenger and Freight Route

Ample Train Service and good connections.

Elegant road bed and superb equipment.

Special Fares for special occasions very often in effect.

Ask the Georgia Railroad Agent for rates and schedules.

J. P. BILLUPS

General Passenger Agent, Atlanta, Ga.

TO THE

Manufacturer and Distributor

Abundant supplies of coal, coke, iron, timber and other raw materials lie in the regions of Georgia and Alabama which are traversed by the

Central of Georgia Railway

Cheap electric power, numerous undeveloped waterpowers, good home markets and excellent shipping facilities. Therefore, manufacturing conditions are ideal.

Many of the cities on the Central of Georgia Railway occupy advantageous positions for distributing warehouses and a number of the larger northern and eastern manufacturers supply their southeastern trade from branch houses in these cities.

Full and detailed information upon application

J. M. Mallory, Industrial Agent
Savannah, Ga.

Classified Opportunities.

Positions Open.

WANTED

Master Mechanic and Chief Engineer

for large manufacturing plant located in the Southeast. Should be well qualified to manage shop having 40 to 50 mechanics making special machine parts and doing general repair work for factory working 2500 people. Must have had experience necessary to manage 5000 H. P. steam plant with Corliss engines, etc. State age and give full information as to past experience. Address Box 383, care "Cotton," Atlanta, Ga.

WANTED—Experienced man to superintend Philadelphia cotton mill of about 4000 ring spinning spindles, spinning coarse numbers. Address with full particulars Box No. 381, care of COTTON, Atlanta, Ga.

WANTED—A first-class Carding Overseer who is competent to handle waste work on woolen system cards. This is a good room and a good job, located in a good section of a Southern State. Position must be filled immediately, therefore a prompt reply is necessary. Address Box 369, care COTTON.

Positions Wanted.

POSITION WANTED—Overseer of Weaving and Designing, young man 33 years of age (Technically trained) who has had 7 years practical experience along these lines would like to make a change, at present employed at a mill in New England making a staple line of Madras, Fancy Border Curtains, Leno's, Dimities, Sheetings, etc. Can do own designing on anything that can be made on Dobby or Plain Loom. Can furnish the best of references. Address Box No. 382, Cotton, Atlanta, Ga.

POSITION WANTED—As overseer of Spinning or Twisting, by a man with 13 years' experience in cotton mills, 9 years as overseer of spinning. Is 37 years old and married. Experience has been all on heavy yarns for the manufacture of heavy ducks. Familiar with Saco-Lowell and Howard & Bullough machinery. Is at present employed, but would be interested in a better position and could accept it on 10 days notice. Does not care to go outside of Georgia. Address Box 368, care COTTON.

POSITION WANTED—As Superintendent by young man 29 years old and married. Has had 7 years experience in practical mill work as overseer of carding a large part of the time. Has also had charge of a combing department. Is familiar with the manufacture of combed yarns, both fine and coarse, and all American makes of machinery, as well as some foreign. Is now employed, but desires to change to secure improved position. Is a textile graduate of a Southern textile school, and is familiar with designing and fancy weaving. Address Box 367, care COTTON.

RATES:

WITHOUT DISPLAY.

"Positions Wanted" 3 cents per word per insertion. Minimum charge 50 cents. Payable in advance

"Positions Open" and other undisplayed advertisements, 4 cents per word per insertion. Minimum charge $1.00. Payable in advance.

(When replies are to be received in our care, allow four words for box address.)

DISPLAYED.

"For Sale" and all other advertisements using bold-face type or otherwise displayed, $2,00 per inch per insertion.

Rates for larger spaces furnished on application.

For Sale.

A BARGAIN IN FINE TOOLS

The following tools are from a private set and have seen little, and in some instances, no usage. The prices shown are the regular list price which will be discounted 33 per cent on single tools or a special price made on the whole outfit. Tools will be shipped by express C. O. D. with privilege of examination:

1 height gauge attachment, $1.75

1—4" Starrett micrometer caliper square No. 28, $11.75.

1 Brown & Sharpe Venier dept gauge, No. 600, $12.00.

1—8" Brown & Sharpe venier height gauge No. 585, $31.75.

1—8" Brown & Sharpe vernier caliper No. 570, $25.75.

1 Brown & Sharpe inside micrometer caliper No. 250—.200" to 1", $6.15.

1 Brown & Sharpe inside micrometer caliper No. 254, 1" to 2", $7.15.

1 lathe indicator with attachments, giving readings in 1/1000 and 1/2000 of an inch, $15.00.

All these tools are in cases except the height gauge attachment.

Apply to Box 17, care SOUTHERN ENGINEER.

WANTED

KNITTING MACHINERY

We are in the market for 50 or 75 Acme Knitting Machines, 176 needle, 3¾ inch cylinder, also a number of Brinton ribbers. Address Box No. 370, care COTTON, Atlanta, Ga.

WANTED
Children's Hosiery.

An inquiry has been received for 1.000 cases of children's ribbed hose in sizes 5 to 10, at a price of 85 cents to 87½ cents a dozen. Any mill in a position to consider a proposition of this character should communicate with Box 28, care COTTON.

Used Machines For Sale

F. O. B. Atlanta

One 20" x 12' Lathe.
One 32" x 12' Lathe.
Two 16" x 10' Lathe.
One 16" x 8' Lathe.
One 24" Aurora Drill Press with tapping attachment.
One new 1½" Single Head Landis Bolt Cutter.
New Marvel Power Hack Saws in stock for immediate delivery.
We can equip you in either new or used machinery. Write us.

Seeger-Walraven Company
Machinery and Mill Supplies.
38 W. Alabama St., Atlanta, Ga.

New and Second Hand

ENGINES

Corliss Automatic and Slide Valve

BOILERS

Pumps, Hoisting Engines, Gas and Gasoline Engines.

MACHINE TOOLS

Lathes, Planers, Shapers, Drill Presses, etc.

WOOD WORKING

Planers, Molders, Band Saws, etc.

ELEC. MACHINERY

Dynamos and Motors

AND SUPPLIES OF ALL KINDS

FRANK TOOMEY, Inc.,

127-31 N. Third St.

Philadelphia, - Pennsylvania

Commission Merchants, Yarn Dealers, Cotton Dealers and Brokers, Etc.

Weimar Bros.

Phone Connections
Works, 2046-48 Amber Street,
PHILADELPHIA, PA.

MANUFACTURERS OF
Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

A. D. Salkeld & Bro.
COMMISSION MERCHANTS
COTTON AND WORSTED YARNS
366 BROADWAY Cor. Franklin St. NEW YORK
DEPT. FRED'K VIETOR & ACHELIS.

WOODWARD, BALDWIN & CO.
DRY GOODS
COMMISSION MERCHANTS
43-45 WORTH STREET, NEW YORK

HAVE THAT SAFE FEELING
When buying products advertised in COTTON you can always have that safe feeling that each advertiser is reliable and lives up to the claims made in his advertisement.

PAULSON, LINKROUM & CO.
COMMISSION MERCHANTS
COTTON YARNS
PHILADELPHIA NEW YORK CHICAGO

Amory, Browne & Co.
Boston New York
SELLING AGENTS FOR

Nashau Manufacturing Company	Jackson Company
Indian Head Mills	Parkhill Manufacturing Company
Alabama	Wauregan Company
Samuel A. Crozier & Son	Lowe Manufacturing Co.
Lancaster Mills	Quinebaug Company

B. B. & R. Knight (Export only)

ESTABLISHED 1872
H. & B. BEER
NEW ORLEANS

HENRY BEER EDGAR H. BRIGHT
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MEMBERS OF
New Orleans Cotton Exchange
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Associate Members of the Liverpool Cotton Association

Private Wires to Principal Points

HUGHES FAWCETT
IMPORTER AND COMMISSION MERCHANT
LINEN YARNS
For Weaving, Knitting and all Purposes
TURKEY RED YARNS
For Towel Borders, Towellings and Bleaching Cloth
Linen Jacquard Harness Twine
And Every Description of Linen Thread and Twine
115 Franklin Street, : NEW YORK

QUALITY YARNS

The Best That Nature and Manufacturing Skill Can Produce.

WHEN you weave your goods with Gray-Dawn Quality Yarns, you may feel assured that the raw material cannot be surpassed by any other yarn on the market. We are so proud of our product that we put this trade mark on every piece.

"Gray-Dawn" Quality Yarn

is always uniform because it is made of the best and most uniformly selected staple, and because it is spun under uniform conditions on the most modern machinery. It is the standard in quality, value and service .

May we send you samples and prices? Write us today.

Gray Manufacturing Co.
Gastonia, - - North Carolina
131 East 23rd Street, New York City.

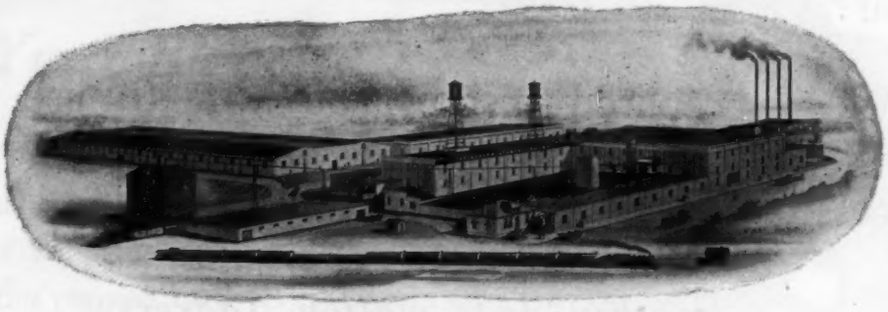
YOU cannot get the desired quality in your goods unless you use yarn that you know is supreme in quality. When you want the best in a fine combed reversed yarn, you can always feel safe in buying

"Parkdale" Fine C. P. Yarn

It is made from the finest combed Peeler Cotton that money can buy, and the most modern methods of production used in its manufacture. Sizes 50s to 80s single and ply for knitting, weaving and mercerizing.

Write today for samples and prices.

Parkdale Mills, Inc.
Gastonia, - - North Carolina
131 E. 23rd St., New York City.



VICTOR MILL STARCH

The Weaver's Friend

It boils thin—penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

A trial order will convince you that VICTOR STARCH has no equal on the market.

THE KEEVER STARCH COMPANY, Columbus, Ohio

Southern Agent: MR. JAS. H. MAXWELL, Greenville, S. C.

If you are not already using VICTOR STARCH call on our representative for a demonstration at your convenience.

Starch

DO YOU KNOW THAT Corn Starch in its modified forms has replaced potato, sago and cassave starches in sizing and finishing?

Every mill that has changed over gives the same reason—"CORN STARCH PRODUCES THE RESULT FOR LESS MONEY."

Have *you* discovered the advantage of using Modifiied Corn Starches, Dextrine, Corn Syrup and Corn Sugar?

We are prepared to show you how to use these products to your advantage and improve your processes.

For Full Information Address

Corn Products Refining Co.

New York

Southern Office
Greenville, S. C.

Starch

MADE IN U. S. A.

HOLLAND ANILINE CO.

SALES OFFICES AND WORKS,

HOLLAND, MICH.

Export Trade Solicited.
Pede-se correspondencia com qualquer paiz.
Se solicita correspondencia con todos paizes.

SOLUBILITY

BRILLIANCY

METHYL VIOLET B

METHYLENE BLUE BB

BISMARK BROWN Y and R

BLUE B, BB, R, RR

SULPHOBISTRE EX. CONC.

CONCENTRATION

Caustic Soda	Cocoanut Oil
Soda Ash	Olive Oil
Caustic Potash	Olive Oil Foots
Aniline Oil	Palm Oil
Carbonate of Potash	Soya Bean Oil
	Castor Oil
Bichromates	Cotton Seed Oil
Chlorates	Red Oil
Prussiates	Etc., Etc., Etc.

B. BROWN & BRO., Inc.

280 Broadway
NEW YORK, N. Y.

Philadelphia Branch:
DREXEL BUILDING Telephone, Lombard 2186
San Francisco:
340 SANSOME ST., Dough. 3332

Make Your Bleach Out of Salt Water

WE manufacture a number of different types of cells for this purpose. All you require besides this is direct current of electricity and salt water.

Write for additional information.

Electro Chemical Company,

Formerly
National Laundry Machinery Co.
Dayton, Ohio, U.S.A.

"AMERICAN DYES FOR AMERICAN DYERS"

KHAKI NO. 2 FOR COTTON

(Fulfilling All Government Requirements)

DIRECT BLUE N
BENZO BROWN N
CHRYSAMINE G N
CONGO RED B N
BENZOL ORANGE N
ETHIOPIAN SULPHUR BLACK

EGYPTIAN TINTS

MARDEN, ORTH & HASTINGS CO., Inc.

(Established 1837)

Manufacturers, Exporters, Importers

BOSTON 61 BROADWAY, NEW YORK CHICAGO
CLEVELAND SAN FRANCISCO SEATTLE

THE BAYER COMPANY, INC.

117 Hudson Street, NEW YORK

Manufacturers of

DYESTUFFS AND CHEMICALS
SULPHUR BLACK
SULPHUR OLIVE DRABS

Works at Rensselaer, N. Y.

OFFICES:

Boston Chicago Philadelphia Providence San Francisco

MILL SUPPLIES

Caustic Soda, Soda Ash,
Caustic Potash, Carbonate of Potash
Chlorates, Bichromates,
Chloride of Lime, Cocoanut Oil,
Soya Bean Oil, Palm Oil,
Olive Oil Foots.

Frederick H. Cone

176 Front Street NEW YORK

Indigo Extract
Natural Indigo

For Cotton and Wool Dyeing.

DYESTUFFS and CHEMICALS

Write for samples and prices

James C. Gismond & Co., Inc.

97 Water St., New York.

Aniline Dyes
Dyewood Extracts

AND ALL

Textile Chemicals

Baltic Chemical Co.

PHONE 4142 WORTH 4143 4144
183 Duane St. New York
Works: YONKERS, N. Y.

SULPHUR BLACK

POWDERED

ALSO

SODIUM SULPHIDE

AND OTHER

Chemicals

FOR

Textile Manufacturers

Manufactured and for Sale by

The Grasselli Chemical Company

New York, N. Y., Philadelphia, Pa., Boston, Mass., Chicago, Ills., Birmingham, Ala., New Orleans, La., Cleveland, O., Cincinnati, O.

ANILINE AND DYEWOOD
COLORS EXTRACTS

Walter F. Sykes & Co., IMPORTERS
Main Office:
85 Water St., New York
Branches:
113 Broad St., Boston 132 Chestnut St., Philadelphia
Paterson, N. J.

JACQUES WOLF & CO., Passaic, N. J.

Sizings and Finishing Products for Cotton, Wool and Silk. All Sulphonated Castor Oils.
MONOPOLE OIL. U. S. Patent No. 861397.
New York Office, 100 William Street.
Western Representative, United Indigo & Che mical Co., Ltd., 218 West Kinzie St., Chicago, Ill.

Only Reliable Products Can Be Continuously Advertised

GUMMED TAPE AND MOISTENING MACHINES
ESPECIALLY PREPARED FOR
SLASHER MACHINES
WRITE US FOR PRICES AND SAMPLES.
ACME GUMMED PRODUCTS CO., 10-14 Tift Street, ATLANTA, GA.

WATER SOFTENING OR FILTRATION

FOR BOILER FEED AND ALL INDUSTRIAL USES
WM. B. SCAIFE & SONS CO., PITTSBURGH, PA.

National Aniline & Chemical Co.

100 WILLIAM ST., NEW YORK

MANUFACTURERS OF

Aniline Colors and Coal Tar Products

IMPORTERS OF

Dyestuffs, Chemicals, Gums, Etc.

OFFICES AND WAREHOUSES:

NEW YORK
BOSTON
HARTFORD
CINCINNATI
KANSAS CITY
PHILADELPHIA
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CHICAGO
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SCHOELLKOPF ANILINE & CHEMICAL WORKS, Inc., Buffalo, N. Y.

TELEPHONE
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CABLE ADDRESS
MADEROBRO

Madero Bros.

Incorporated

Chemical Dept.

115 Broadway, New York

QUEBRACHO EXTRACT
LOGWOOD EXTRACT
SOLID LOGWOOD
FUSTIC EXTRACT
HEMATINE CRYSTALS
ANILINE DYES

SODA ASH
CAUSTIC SODA
BLUE VITRIOL
CHLORIDE OF LIME
SULPHURIC ACID
NITRIC ACID
MURIATIC ACID
AMMONIA
CHLORATE OF POTASH
MURIATE OF POTASH
ALL OTHER CHEMICALS
BICHROMATE OF SODA
BICHROMATE OF POTASH
CITRIC ACID
TARTARIC ACID
TANNIC ACID

Established 1870

The Warren Soap Manufacturing Co.

77 Summer St., Boston, Mass.

Our success in supplying textile soaps to the trade for the past forty-six years is based on our unremitting endeavor to secure

Highest Quality
Reasonable Prices
The Best Service

Founded 1778

W. H. & F. Jordan, Jr.

PHILADELPHIA, Pa.

CHEMICALS AND OILS

We Specialize in

Bi-Chromate Soda	Chloride Lime
Chlorate Soda	Bluestone 99%
Sulphide (Chipped) Soda	Olive Oil
Caustic Soda	Turkey Red Oil
Soda Ash 58%	Castor Oil
Glauber Salts	Peroxide Hydrogen

also

DEALERS IN SOAP MAKERS MATERIALS.

Sole Distributors of

Progressive Textile Soda. Progressive Concentrated Soda.

Prices—*Exceptional.* Service—*Surpassing.*

BRANCH OFFICES: NEW YORK CHICAGO

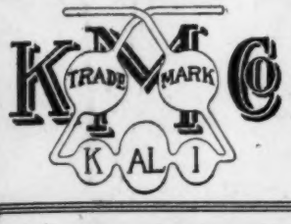
SULPHANTINE

Prevents Tender

SULPHUR DYED GOODS

BY

Stopping the Action of Sulphide of Soda.



The cost of using Sulphantine is very low. Write for information.

KALI MFG. CO.

1406-08-10 N. Front St., Philadelphia

Manufacturers of Kali Hydroxy Soluble Oil.

For Hosiery Dyeing:

ZETA BLACK

Fast and Non-Bronzing
A Test Will Convince

A. KLIPSTEIN & COMPANY

644-652 Greenwich Street,
New York City

DELAHUNTY DYEING MACHINE COMPANY

ESTABLISHED 1880

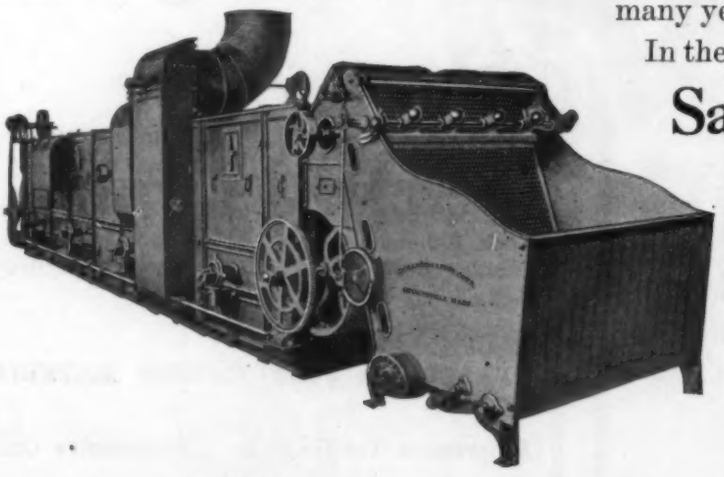
Manufacturers of Textile and Mining Machinery

Revolving Cylinder Raw Stock Dyeing and Bleaching Machines
Revolving Cylinder Hosiery Dyeing and Bleaching Machines
Hosiery, Oxidizing, and Tom Tom Machines.
Circulating Type Raw Stock Dyeing and Bleaching Machines
Circulating Type Beam Dyeing Machines for Dyeing
Cotton Warp on Beams, 1 to 12 Beams in One Operation
Special Machines for Aniline, Sulphur, Indigo, and Other Vat Colors

OFFICE AND WORKS, PITTSTON, PA., U. S. A.

SARGENT DRYERS mark progress in Dryer Development comparable to that made in other fields of mechanical endeavor.

They are favored with a natural preference because they are designed on basic principles of air circulation, conveying, and general drying apparatus construction, which have had the approval of discriminating mill men and drying engineers for many years.



In the

Sargent Dryer

these principles have been combined and refined, making a complete machine which is unexcelled.

For drying cotton, linters, wool, hair, flax and other classes of raw material.

C. G. SARGENT SONS Corp., GRANITEVILLE, MASS.

FRED H. WHITE, Southern Agent, Charlotte, N. C.

Soluble Grease

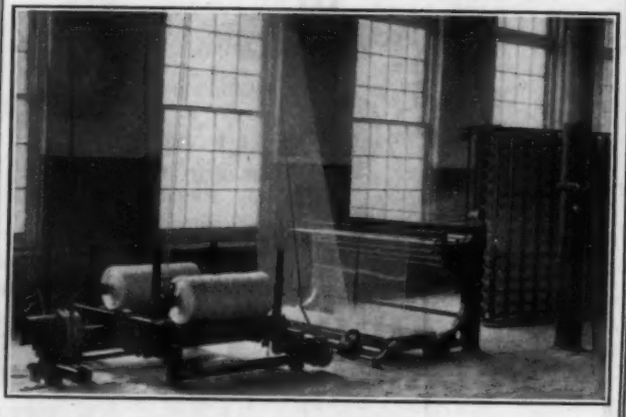
To make the stock, yarn or warps Run Smooth, regardless of dyes that make the Cotton Fibre harsh.

BOSSON & LANE

ATLANTIC MASS.

COCKER

Tandem Balling Warper



DESIGNED and built especially to economically and correctly warp coarse singles and plied yarns.

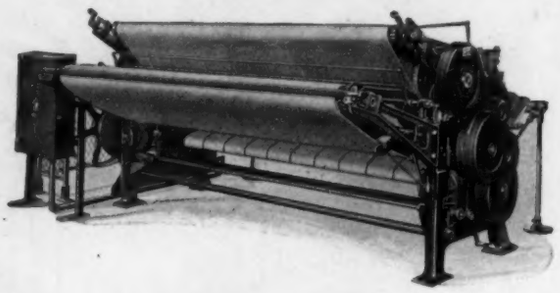
Arranged with standard V type creel with capacities up to 1000 ends and will ball two standard 30" traverse warps at one time.

Correspondence solicited.

Cocker Machine & Foundry Co.

Builders of Warpers, Beamers and Warp Dyeing and Sizing Machinery

GASTONIA, N. C.



More Work—
Fewer Operatives

Speed: A continuous flow of hosiery through the press.

By this new method, with the American Rotary Hosiery Press, four operators can turn out 3,000 dozen pairs of hose in a working day. In one plant a single machine is saving $144.00 a week in wages over the old method.

Can you afford to be without it?

Write for the facts.

THE AMERICAN
LAUNDRY MACHINERY COMPANY
Specialty Department
CINCINNATI, - - OHIO
H. G. MAYER, Southern Textile Agent
Realty Building, Charlotte, N. C.

BUTTERWORTH

Butterworth Finishing Machinery successfully apply the most advanced ideas in finishing all classes of textile fabrics.

We design both standard and special types of machinery, and show you how best to use them to improve your finishing processes and methods.

Write for catalog stating fabric and finishing required.

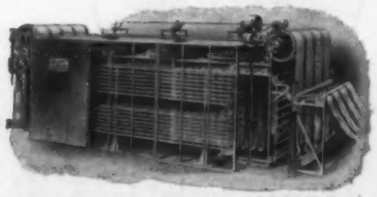
H. W. BUTTERWORTH & SONS CO.
Established 1820
PHILADELPHIA

PROVIDENCE OFFICE
Turk's Head Building

FINISHING Butterworth MACHINERY

36

FINISHING MACHINERY



"Proctor" Automatic Loop Dryer

The "Proctor" Loop Dryer for knit goods in the string, toweling, etc., feeds all goods flat and turns them out perfectly dried and folded.

The scientific recirculation of heated air in "Proctor" Dryers requires less steam to hold sufficient drying temperature and retains enough moisture to absolutely prevent baking and harshness.

Illustrated Catalog on request.

The Philadelphia Textile Machinery Company

Philadelphia

Providence, R. I. Howard Building
Chicago, Ill. Lytton Building
Charlotte, N. C. H. G. Mayer—Realty Building

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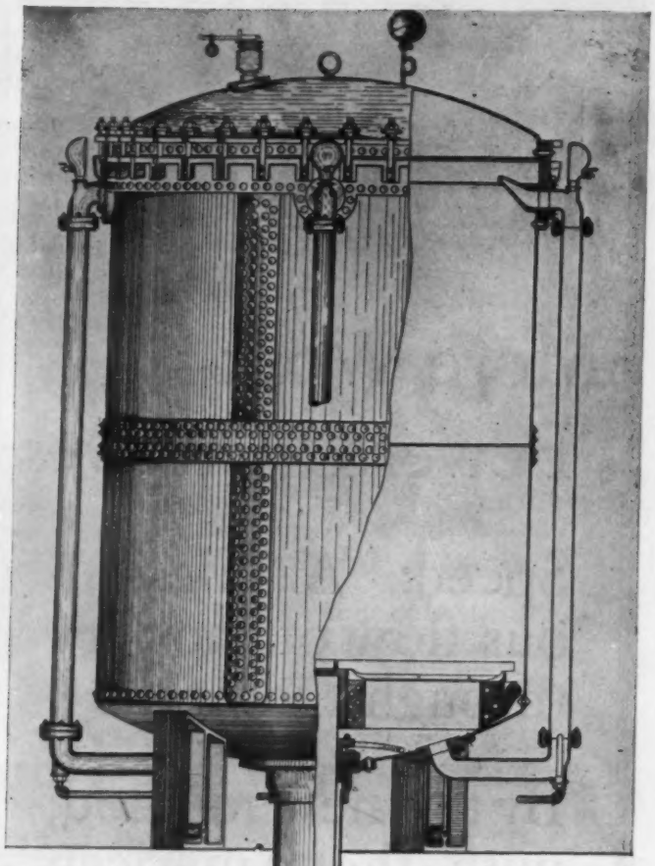


"ALLEN" HYDR BOILING PATENT AULIC KIERS

THIS is the last word in a hydraulic boiling kier for raw stock, and especially for absorbent cotton.

It is mechanically correct in every detail. No live steam is admitted to the kier. Absolutely uniform results are secured with a minimum consumption of steam.

We would like to show you how an "Allen" Patent Kier will improve your present system. May we? Ask today for full information.

We also make the "Allen" Injector Kier and the "Allen Worcester" Kier which has electric driven circulator and indirect heater.

Worcester Steam Boiler Works

Wm. Allen Sons Co., Prop.

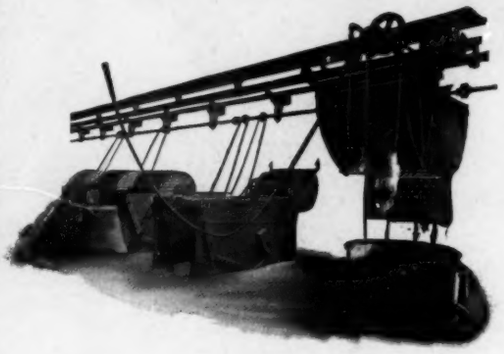
Worcester, Massachusetts.

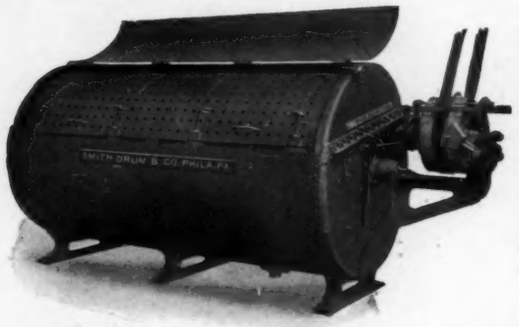
Logwood Extracts for Extracting the Coloring Matter from Logwood Chips.

Sulphur Black Dyeing Machines

Capacities from 50 to 500 lbs. per batch.

CIRCULATING AND ROTARY TYPES





Smith, Drum & Co.

BUILDERS OF "THE BEST" LABOR SAVING DEVICES

Southern Agent
H. G. MAYER, Charlotte, N. C.

Allegheny Ave., Below 5th St.
PHILADELPHIA, PA.

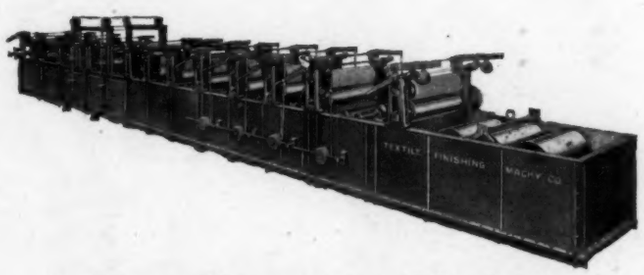
Machinery

for

Singeing, Bleaching, Mercerizing, Dyeing, Drying, Printing and Finishing

TEXTILE FABRICS AND WARPS

Kiers.
Skein
Mercerizing
Machines.
Mangles.



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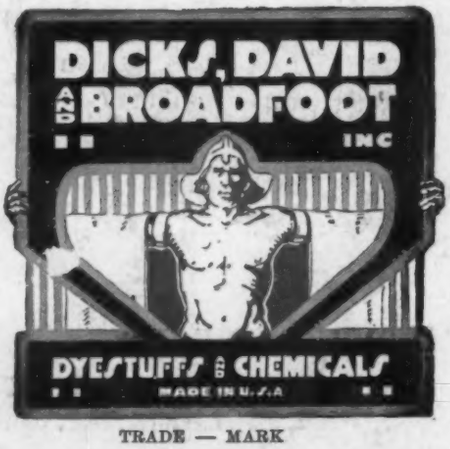

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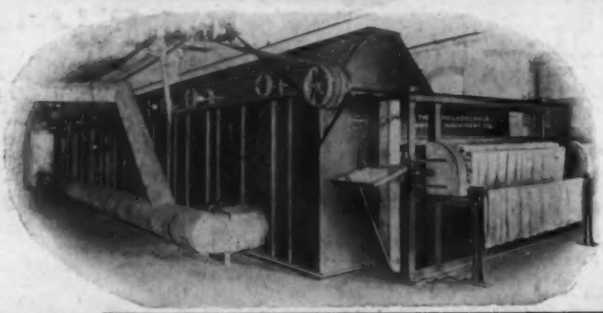

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